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# Del Norte Zero Waste Plan


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Funded in part by a grant from the U.S.D.A. Forest Service
Rural Community Assistance Program,
Northwest Economic Adjustment Initiative

# ACKNOWLEDGMENTS

The staff of the Del Norte Solid Waste Management Authority wish to thank all of the people and organizations which contributed to this plan, the first of its kind in the United States.

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For inspiration, review and comment:
Clarke Moore, Joe Mendez, Neil Austin, Bill Sheehan, Eric Lombardi, Brenda Platt, Rick Best, Ed Boisson, Suzy Smith, Ted Weston

For support during and after the Summit: Michael Penney, Mickey Youngblood, Arthur Reeve, and Ellen Brown

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Dear Reader:

On February 15, 2000 the Board of Commissioners of the Del Norte Solid Waste Management Authority agreed in concept with the Del Norte Zero Waste Plan. Although the Board recognized that the plan provides a guide and a vision for discard management in Del Norte County, the Board concluded that the conceptual agreement with this plan does not constitute a wholesale approval of all of the policies and programs contained within the plan. Consequently, the Board will consider each new policy or program on its individual merits and parts of the Zero Waste Plan may be implemented as economics allow.

Sincerely,

Michael Scavuzzo
Chair

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# I. Executive Summary

This Zero Waste Plan (ZWP) is the first of its kind: a municipal plan for discard resource conservation rather than discard management. Environmentally, the problem with our material culture is not disposal, but the need to mine and make new goods to replace those we failed to reuse, repair or recycle[1]. Most environmental impacts of our material culture come from the extraction, processing, and delivery of material goods.[2] While many counties have programs addressing waste prevention, composting, recycling, and education and public information, disposal is still widely treated as the catch all management of unrecovered discards.

Zero Waste policies makes both environmental and economic sense for Del Norte County. Within three years, Del Norte's only landfill will close and disposal fees are expected to nearly double as waste is exported to disposal facilities outside the County. Time is ripe for challenging the assumption that these materials are simply wastes which require planning and payments for transfer, transport, and disposal. Research from a variety of sources suggest that discarded materials are more appropriately viewed as streams of local resources for creating local jobs through salvage, reuse, processing and secondary manufacture.

Concurrent increases in awareness of the environmental problems with disposal and incineration, and challenges in siting new disposal facilities have driven increases in disposal costs across the nation. These situations serve as incentives to create cost-effective reuse and recovery programs before disposal rates rise.

This plan describes how Del Norte can *continually* increase the efficiency of natural resource use and thereby reduce waste disposal. The Plan begins with a Discard Study, describing Del Norte's discards (materials collected for recycling, composting or disposal), generated from six populations, and comprised of over 40 material types. The Discard Study is then used as the basis for a discard recovery Service Voids Analysis, which is a system to select and prioritize target materials and their associated waste reduction, recovery, processing and marketing strategies.

The remainder of the ZWP describes programs for Del Norte's continual movements towards Zero Waste. First, the ZWP selects from a variety of market incentives and contract provisions to continually encourage waste reduction. Next, the ZWP considers mechanisms to encourage and expand on-site management, waste prevention, and advocacy for life-cycle design.

All recovery is local: the potential for expanding recovery on the North Coast is constrained by the end-use market demand, regional processing infrastructure and transport costs. To examine ways to expand regional recovery and market development, the Authority convened the First Border Coast Regional Recycling Market Development Summit In August 1998, inviting participants from the Oregon and California counties surrounding Del Norte. The Summit

included group discussions of the potential for 1) Reuse & Salvage, 2)Construction and Deconstruction materials, 3) Organics, 4) Scrap Metals, and 5) Containers and Papers, and each of these topics are addressed as separate recovery strategies. The ZWP discusses other market development strategies, including regional cooperation and integration of the ZWP into other community plans such as the Overall Economic Development Plan, and government procurement policies.

The selected market incentives, waste reduction and recovery policies and programs build upon local conditions and are described in groups, as most material recovery strategies target several distinct populations, each of which has discard materials which may be processed in a similar fashion. The recovery groups for Del Norte's ZWP include Reusable goods, Deconstruction, Organics, Containers & paper, Metals, Polymers and Mixed materials. The facility and related needs for each recovery group are considered within the context of describing the requirements of a Resource Recovery Park which could be developed as a common home for all such facilities. While it may be that such a Resource Recovery Park may *not* ultimately house all of these facilities, such analysis gives an overview of opportunities for such recovery programs to share equipment and facilities. Although the focus of the ZWP is planning for waste reduction and recovery, a relatively brief discussion is also included of the management of residuals and disposal in the movement towards Zero Waste. Finally, a description of the staffing requirements, necessary funding mechanisms, priorities, and development schedules are also included.

The process for developing this Zero Waste Plan began in 1997 when the Del Norte Solid Waste Management Authority endorsed the policies of Zero Waste, End Welfare for Wasting, and Jumpstart Jobs from Design and Discards. While this ZWP has been developed as a plan for implementing these policies in Del Norte, where possible the authors have included general discussions of alternative programs to move towards Zero Waste in hopes that other local governments may also develop their own Zero Waste Plans.

# II. The Vision: Zero Waste in Del Norte

## A. An Historical Perspective

Human impacts on the planet are directly related to the size of our population, how much stuff each of us have and use, and the technologies we employ to do, make, distribute and recover things. Currently, although Americans comprise only 5% of the global population, we use 30% of the world's resources.[3] If every person on Earth lived like a typical American, we would need eight planets to support our current population. Equally alarming, global population doubled for the first time during the last four decades, and can be expected to double again during the next four.

The history of solid waste management in the United States began with the awareness that the health impacts of accumulated refuse were connected to the spread of disease in several urban areas. Communities and governments set up systems to assure the regular collection of refuse, frequently granting exclusive collection franchises within an urban area. Increasing awareness of the impacts of incineration and landfilling made siting and permitting new disposal facilities an expensive and time-consuming process, in some locations driving up disposal fees dramatically.

The concurrent increases in public awareness of litter and illegal dumping, the costs and impacts of disposal, and the difficulties in siting new disposal facilities all stimulated widespread public support for incorporating waste reduction, recycling, and composting into an integrated approach to solid waste management. In 1989, the California Integrated Waste Management Act required that each municipality plan to divert 50% of the per capita waste disposed in 1990 from landfill by the year 2000. While the programs established in response to this legislation have done much to expand recovery, these local programs have done relatively little to directly promote reuse or to stimulate demand for recycled-content products.

In the past ten years, research has reaffirmed how important reuse, recycling and composting are for the environment. Most environmental impacts of our material culture come from the extraction, processing, and delivery of material goods.[4] It's as if each product casts a long shadow representing the impacts of mining, logging, refining, manufacturing, and trucking. Environmentally, the big problem with our material culture is not disposal, but the need to mine and make new goods to replace those we failed to reuse, repair or recycle[5].

Most objects in our culture are currently viewed more as products than processes. The extraction, manufacturing, and distribution of a product, as well as its management after use are all viewed as largely

irrelevant to the product's function. Almost by definition, most people don't really want to deal with garbage. After a product has finished its useful life, most people just want a safe place to get rid of it: whether into a trash can, recycling bin or compost bucket. While we each may pay for a product once at the purchase counter, we also pay for the handling of that object again when we pay for someone to collect and manage our discards, again when mining and extraction impacts degrade the environment, and again for someone else to clean up waste which has been littered, dumped illegally, or improperly managed. Thus while we may only pay for a product once, we essentially pay for the process at least three times.

The way we do and make things would take less of a toll on the planet if the service or product with the lowest price also did the least harm. Distortions in the economy created by subsidies for virgin materials, energy extraction and disposal can be changed. Over twenty-five other countries including Japan, Germany and Canada have legislation to help packaging producers share in the responsibility for recovering the materials used to make their products. Here in California, there are already deposits in place for beverage containers, tires, and motor oil.

This plan describes how Del Norte County can start to reduce our impact on the planet by strategically and methodically improving the material efficiency of our economy while fostering local businesses in reuse, recovery, composting, and recycling-based manufacturing.

## B. What Is Zero Waste?

Whether examining the material efficiency of refining minerals, the thermal efficiency of transforming energy into work, the chemical efficiency of combustion, or the production efficiency of labor, most processes have waste. What then, does Zero Waste mean? In nature, Zero Waste is just the way things work. In a functioning ecosystem, the wastes of one set of creatures are the food or habitat for others. Zero Waste is an approach which applies and integrates the lessons from natural systems, industrial ecology, pollution prevention strategies, Permaculture[6], Strategic Recycling[7] and the Natural Step[8] into a municipal approach towards managing discards.

Zero Waste is more comprehensive than just recycling or integrated waste management because it:

- Manages discards as a resource conservation problem, not a collection and disposal problem;
- Recognizes that all discards have value as resources in the proper context;
- Asserts that government's primary role in managing discards is to structure the market and educate the community to promote material and energy efficient design, production, and recovery;
- Strives to stimulate economically sustainable systems for a cyclical

flow of resources within a competitive marketplace; and

- Defines local policies for communicating the local position that garbage is an unfunded mandate to producers of materials and products which are not economically recyclable in the region.

The following table defines Zero Waste for the community partners which share responsibility for reduction and recovery of discards.

## Table II-1: Definitions of Zero Waste

| For this group | They move towards Zero Waste by.. | to reap these benefits |
|---|---|---|
| Local Government<br><br>or the local agency responsible for discard management and recovery | ...implementing policies which provide ongoing incentives to reduce waste and find higher better uses for all discards while protecting public health<br><br>...actively transferring responsibility for targeted discards to producers through cooperative partnerships<br><br>...advocating State and Federal policies which remove subsidies for virgin materials extraction, energy, and wasting | to continually improve the vitality, sustainability, self-reliance, and resource efficiency of a regional economy. |
| Local Economic Development Agencies | ...stimulating and recruiting businesses and non-profits which design to reduce lifecycle impacts, and which collect, process, transport, use, or add value to discards | ... to create local jobs adding value to recovered materials while lowering overall cost for discard management services. |

| For this group | They move towards Zero Waste by.. | to reap these benefits |
|---|---|---|
| Manufacturing and Packaging Businesses | ...forming partnerships to continually improve lifecycle resource efficiency and to reduce lifecycle resource impacts<br><br>...actively sharing the responsibility with customers and communities to reduce lifecycle impacts of their services and to recover the resources embodied in their products and services | ...to create sustainable, responsible, and profitable businesses. |
| Repair, Reuse, Salvage, Composting, Collection, Secondary Processing & Manufacturing businesses | ...advocating that all materials have a recovery infrastructure supported by producers, retailers, local government and the community | ... to promote a business climate which encourages expanded and diversified recovery and discourages wasting |
| Residents and Communities | ...advocating that everyone should pay for the lifecycle impacts of a product once, at the purchase counter<br><br>...considering the lifecycle impacts of products before purchase<br><br>...discarding materials so they have the maximum potential for reuse or recovery | ...to reduce the impacts of our material culture and thereby move towards a more sustainable society |

Figure II-1, entitled "Approaches to Zero Waste" shows the evolution of materials management from the respective perspectives of Customers, Technicians, collectors and processors, Materials management categories, and in Regulation. Generally, we all move from the somewhere inside the box, ascending through the perspectives and policies toward Zero Waste outside the box. Lifecycle assessment of discard management techniques involve further considerations of collection and transport costs, as well as lifecycle impact considerations.

Figure II-1

# Approaches to Zero Waste

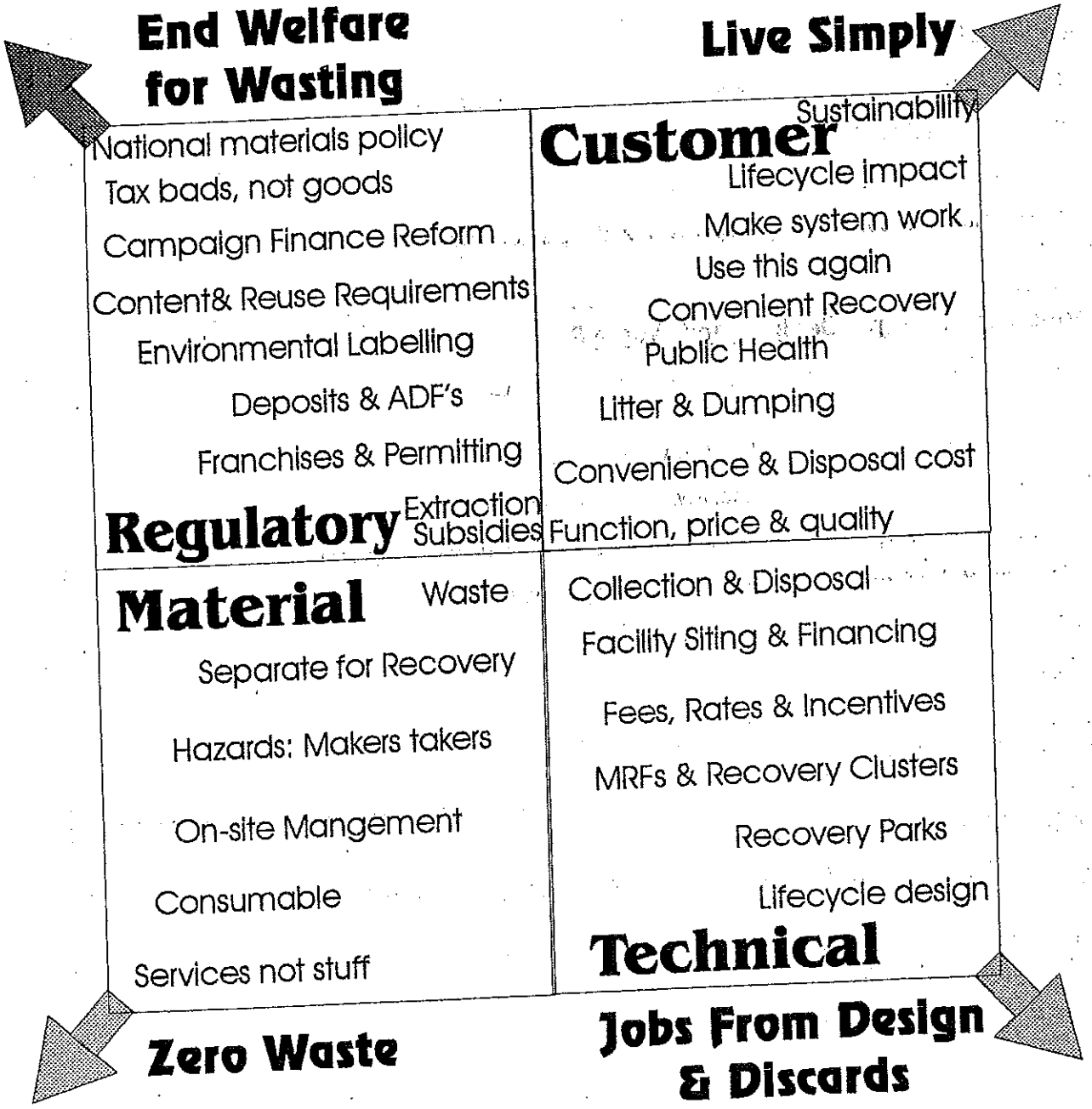


Table II-2 shows some world wide web sites and associated organizations which are resources for additional information related to Zero Waste, sustainability, industrial ecology, and related concepts. The Authority's listing of the sites below does not imply endorsement of the information, products, or services of these sites or organizations.

## Table II-2: Web Sites for Zero Waste, Related Ideas and Organizations

| | |
|---|---|
| **Zero Waste Sites:** | |
| Zero Waste America | http://www.zerowasteamerica.org |
| Grassroots Recycling Network | http://www.grrn.org |
| Zero Waste New Zealand Trust | http://www.zerowaste.co.nz |
| Zero Emissions Research Initiative | http://www. zeri.org/index_low.htm |
| **Industrial Ecology, Design, and Waste Prevention Sites:** | |
| Interagency Working Group on Industrial Ecology | http://www.oit.doe.gov/mining/materials/index.html |
| The Natural Step | http://www.naturalstep.org |
| Permaculture Magazine | http://www.permaculture.co.uk |
| RMIT Center for Design | http://daedalus.edc.rmit.edu.au/cfd_s_m.html |
| Mining Impact Coalition | http://www.miningimpacts.net |
| Carnegie-Mellon Green Design and Lifecycle Impact Assessments | http://www.eiolca.net |
| US EPA site for Extended Product Responsibility | http://www.epa.gov/epr |
| **Sustainability Sites:** | |
| Principles of Sustainability: A Compilation | http://www.brocku.ca/epi/sustainability/sustprin.htm |
| DOE Center of Excellence for Sustainable Development | http://www.sustainable.doe.gov |
| Center for Sustainable Design | http://www.cfsd.org.uk |

**Simple Living Sites:**

| | |
|---|---|
| Simple Living Network | http://www.simpleliving.net |
| Center for the New American Dream | http://www.newdream.org |
| The New Road Map Foundation | http://www.newroadmap.org |
| Minnesota Waste Reduction | http://www.reduce.org |
| Use Less Stuff Reports, current & past Issues | http://cygnus-group.com/ULS/Current_ULS_Reports/Reports.html |
| EcoIntelligence | http://www.ecoiq.com |
| Adbusters | http://www.adbusters.org/home |

**Advocacy for Reuse, Recycling, and Composting and Resources for Local Government:**

| | |
|---|---|
| California Resource Recovery Association | http://www.crra.com |
| Californians Against Waste | http://www.cawrecycles.org/welcome.html |
| National Waste Prevention Coalition | http://www.dnr.metrokc.gov/swp/nwpc/index.htm |
| The Compost Resource Page | http://www.oldgrowth.org/compost |
| California Peer Review of Alternatives to Hazardous Products | http://www.peerreview.com |
| California Integrated Waste Management Board | http://www.ciwmb.ca.gov |
| Alameda County Waste Management Authority | http://www.stopwaste.org |
| Del Norte Solid Waste Management Authority | http://www.northcoast.com/~recycle |

Table II-3 shows a full spectrum hierarchy of discard management, expanding on the integrated waste management hierarchy of Reduce, Reuse, Recycle, Compost, Incinerate, and Landfill. This full spectrum adds product and package design, differentiates between closed-loop recycling and other recycling, and includes varying degrees of improper and undesirable discard management, including litter and illegal dumping, which are discouraged, but do occur.

**Table II-3: Full Spectrum Hierarchy of Discard Management**

| Full Spectrum Hierarchy of Discard Management | Examples |
|---|---|
| Restore to the Natural Step | See The Natural Step web site |
| Reengineer to deliver services not stuff | Designing for Disassembly |
| Reducing total impact of process | Closed loop parts washing |
| Reducing energy or material impact of process | Returnable transport packaging |
| Reuse in total function and material | Maintenance |
| Reuse in partial function | Repair & Parts Salvage, 2-sided copying |
| Reuse in different function | Creative Reuse, Scrapture |
| Recycling in material, closed loop recycling | Glass recycling |
| Compost and beneficial soil amendments | Municipal composting with quality control |
| Recycling in engineered material with degradation | Particle boards, Gridcore |
| Recycling in material with degradation | Paper recycling |
| Recycling in material with aggregation | Plastic lumber |
| Incineration for energy | Burning tires in cement kilns |
| Use of material for structural fill | Using concrete for road construction |
| Volume reduction | Shredding, baling, crushing, MSW compost |
| Use as a soil substitute | Landfill alternative daily cover |
| Incineration for volume reduction | MSW Incineration |
| Landfill | Crescent City Landfill, Fresh Kills, NY |
| Materials create visual blight | Littered paper bags |
| Materials create short-term physical hazard | Broken glass, plastics in the ocean |
| Materials create long-term biological hazard | Heavy metals in dumped motor oil, illegal dumping of hazardous wastes |

# III. Existing Conditions

At the dawn of a new millennium, Del Norte County consists of approximately 32,000 residents in just over 9,100 households, including approximately 3,300 prisoners in Pelican Bay State Prison (though that population fluctuates between 2,280 and 3,500). The area is rural, consisting of the incorporated town of Crescent City and several small unincorporated towns including Smith River, Gasquet, Hiouchi, and Klamath.

In 1994, the last large lumber mill in Del Norte County closed. With the closure of the Rellim Lumber Mill, Del Norte County ended one era and began another. Thirty years before, 43 such mills had operated as the foundation of the local economy. With the establishment of Redwood National and State Parks in the early 1970's and the Smith River National Recreation Area in the late 1980's, over 75% of the County land area is National Park, Forest Service and other government owned land. The role of logging and timber has dramatically declined over the past 30 years, and it continues to drop. Between 1992 and 1997, the number of manufacturing jobs in lumber and wood products has declined by over 38%[9].

With the decline readily available natural resources, Del Norte can facilitate an alternate way to manufacture: using recovered materials. For example, Hambro Forest Products uses wood waste from landscapers instead of mill wastes to manufacture particle board, and Eco-Nutrients uses crab and shrimp shells and fish waste for fertilizer, cat food, and chiton (which is manufactured elsewhere into a variety of products, including dissolving sutures and contact lenses). These companies manufacture with materials which once were regarded as waste. The time is ripe to increase such recovery of the resources in Del Norte's discards as an economic development strategy.

In the next several years, Del Norte's only landfill will close, increasing disposal fees by 50% to 100%. To keep costs to ratepayers low and to comply with the Elements of the Del Norte Countywide Integrated Waste Management Plan (DNCIWMP)[10], the Authority intends to implement programs which supplant reliance on disposal by increasing reuse, recycling, composting, and by expanding local processing and manufacturing capacity for recovered materials. Many aspects of the recommendations of this Zero Waste Plan (ZWP) are required under the DNCIWMP, and all are consistent with and complementary to the Elements of the DNCIWMP. The Del Norte County ZWP will be used as a strategic policy to guide future updates and revisions of the DNCIWMP.

According to the California Integrated Waste Management Board, there are four principle barriers to increasing recycling and other alternatives to disposal in rural areas:

- barriers to raising rates (e.g. potentially increases illegal dumping),
- high collection and processing costs,
- the cost of transport commodities to existing markets, and
- the scarcity of markets in

general[11].

This ZWP addresses the needs for businesses and non-profits looking to create or expand businesses recovering, processing, reselling, manufacturing, and using recovered materials. Regional conditions which demonstrate the need to develop local markets for recyclables include:

1) Local end-users are needed to diversify and stabilize current and future markets;

2) Sufficient volumes of recyclable materials are available for small-scale manufacturing;

3) Increases in recycling have glutted existing markets;

4) Small amounts of materials in other counties in the region could be pooled to have enough material to support a local manufacturer.

For these reasons, long range planning and regional cooperation are needed to support recycling[12].

Recycling market development is thus both an initiative to create jobs as well as a necessary infrastructure for the expansion of salvage, reuse, recycling, and composting operations to incrementally supplant the existing disposal infrastructure. The increased cost of disposal after the landfill closes will also make increased recovery and recycling comparatively more cost effective and/or profitable. However, waiting for the disposal cost increases could delay the expansion of the processing and secondary manufacturing operations by more than five years. Local markets for recyclables could mean better and more stable prices for recovered materials, extended life for the local landfill (and thus short-term lower disposal costs), and decentralized development of the recovery and processing infrastructure before the landfill closes.

This ZWP provides detailed recommendations to implement the principles adopted by the Del Norte Solid Waste Management Authority in 1997: Zero Waste, End Welfare for Wasting, and Jumpstart Jobs with Design and Discards.

Under the California Integrated Waste Management Act, all municipalities in the State must plan to cut their waste in half from 1990 levels by the year 2000. The Del Norte County Zero Waste Plan will provide a model for how a small rural local government agency can apply these principles, plan for total recycling, and create a long-term plan to incrementally reduce reliance on disposal through more efficient use of discarded natural resources.

# A. Administrative Structure and Community Partners

The Del Norte Solid Management Authority (Authority), is a joint powers authority of the City of Crescent City and the County of Del Norte, and is responsible for planning and administering all programs related to discarded materials, including waste prevention, reuse, public education, composting, recycling, recycling market development and disposal programs. The table below lists many of the community partners the Authority will work with to implement Zero Waste programs:

## Table III-1: Community Partners

| Role or Function | Community Partners |
|---|---|
| Economic Development, Policies, Zoning, and Buy-Recycled | Del Norte County Economic Development Department<br>City of Crescent City<br>Del Norte Community Development Department<br>Humboldt County Recycling Market Development Zone |
| Public Education | Cadre of Corps (AmeriCorps and the California Conservation Corps)<br>Del Norte Unified School District<br>City of Crescent City<br>Del Norte County Health Department<br>The Triplicate, KPOD, KCRE |
| Reuse & Recovery | Del Norte Repair, Rental, Consignment & Thrift stores<br>St. Vincent DePaul of Lane County and Humboldt<br>Del Norte Builders' Exchange |
| Recycling | Julindra Recycling<br>Humboldt Sanitation<br>Redwoods United<br>Curry Transfer & Recycling<br>A-1 Auto Recycling<br>Short's Steel |
| Composting | Hambro Forest Products<br>Brock Dairy Ranch |
| Collection | Del Norte Disposal<br>Redwoods United |
| Salvage / Disposal | Pacific Waste Services<br>Winzler & Kelly Consulting Engineers |

# IV. Del Norte Discards

## A. Del Norte Waste Reduction & Recovery

In 1998, the Authority surveyed and summarized the estimated tonnage from all existing waste prevention, recycling, and composting programs operating in Del Norte County during the previous year. The locations of the processing facilities and/or end-use market for each material was also recorded within the survey. The locations which facilitated reuse and recycling are indicated in Figure IV-1,and are further described in Table IV-1, below. The reader may note that specialized reuse such as used building materials, used musical instruments, and antique restoration are only available from regions to the south or the north of Del Norte.

### Waste Reduction, Reuse, and Repair

**Table IV-1: Reuse, Rental, & Repair Businesses in the Del Norte Region**

| Type of Business | Crescent City | Hiouchi | Smith River | Klamath | Brookings | Arcata | Eureka |
|---|---|---|---|---|---|---|---|
| **Reuse** | | | | | | | |
| Antiques | 5 | 1 | 1 | | Y | Y | Y |
| Appliances | 1 | | | | | | Y |
| Automobiles | 4 | | | | Y | Y | Y |
| Books | 5 | | | | Y | Y | Y |
| Building Materials | | | | | | Y | Y |
| Glass | 2 | | | | | | Y |
| Music | 2 | | | | | Y | Y |
| Children's Toys & Clothing | 1 | | | | Y | Y | Y |
| Office Equipment | 1 | | | | Y | Y | Y |
| Materials Exchanges | 2 | | | | Y | Y | Y |
| Furniture, Clothing, Household items | 9 | | | | Y | Y | Y |
| **Rental** | | | | | | | |
| Appliances | 1 | | | | Y | Y | Y |
| Bicycle | 1 | | | | Y | Y | Y |
| Camping & Rec. Equipment | | | | | Y | Y | Y |
| Carpet & Upholstery Cleaning | 5 | | | | Y | Y | Y |
| Computer & Electronics | 1 | | | | Y | Y | Y |
| Formal Wear | 1 | | | | Y | Y | Y |
| Furniture | 1 | | | | Y | Y | Y |
| Musical Instruments | | | | | Y | Y | Y |
| Party Supplies | 1 | | | | Y | Y | Y |
| Tools & Equipment | 2 | | | | Y | Y | Y |
| Video Equipment | 3 | | | | Y | Y | Y |

**Table IV-1: Reuse, Rental, & Repair Businesses in the Del Norte Region**

| Type of Business | Crescent City | Hiouchi | Smith River | Klamath | Brookings | Arcata | Eureka |
|---|---|---|---|---|---|---|---|
| **Repair** | | | | | | | |
| Small Engine Repair | 2 | 1 | 1 | | Y | Y | Y |
| Antique Restoration | | | | | Y | | Y |
| Appliances, large | 4 | 1 | 1 | | Y | Y | Y |
| Appliances, small | 1 | | | | Y | Y | Y |
| Auto Repair | 20 | | | 1 | Y | Y | Y |
| Bicycle | 2 | | | | Y | Y | Y |
| Bridal Gown Restoration | 1 | | | | Y | Y | Y |
| Clocks & Watches | 1 | | | | Y | Y | Y |
| Electronics | 4 | | | | Y | Y | Y |
| Furnaces | 4 | | | | Y | Y | Y |
| Fences | 1 | | | | Y | Y | Y |
| General / handyman services | 1 | | | | Y | Y | Y |
| Mobile Home repair | 4 | | | | Y | Y | Y |
| Blades & Sharpening services | 1 | 1 | 1 | | Y | Y | Y |
| Shoes & leather | 1 | | | | Y | Y | Y |
| Tire retreading & repair | 4 | | | | Y | Y | Y |
| Tools | 2 | | | | Y | Y | Y |
| Upholstery | 2 | | | | | | |

*** This list was derived from the "Del Norte's Guide to Reuse, Repair, Rental and Restoration Services 1st Ed. July 1997.**

**Figure IV-1** maps the locations of Del Norte reuse, repair and recycling businesses. The reader may notice that antique stores, thrift stores, and auto repair shops all have a tendency to occupy the same neighborhoods.

## On-site Management

The Authority's promotion of on-site management methods which reduce waste have included monthly backyard composting workshops and general public education campaigns promoting reuse, repair, composting, and recycling.

## Self-haul Recovery

Recovery in Del Norte is mostly self-haul. The recovery businesses described in Table IV-1 depend primarily on self-haul customers. Recovery of rocks and soils, concrete and asphalt for use at the Crescent City Landfill all depend on having these materials separated prior to delivery, and most are delivered self-haul by the major construction contractors. There are at least two other ways materials are collected for recovery: Private recycling and other Collections of Recyclables.

## Private Recycling

Private recycling in Del Norte totaled over 3100 tons in 1997, or approximately two thirds of all recovery in that year. Private recycling includes three main activities:

- Recovery of fish carcasses and crab and shrimp shells from local fish processors, either frozen and processed for pet food, or collected by Eco-Nutrients (2880 tons);
- Separation, compaction and back-hauling of corrugated cardboard from the major grocery and discount stores (230 tons),
- Separation, collection and marketing of other materials which do not have end-users in Del Norte: this included a collection of textiles from a drop-off trailer available to thrift stores in the region and set up by St. Vincent DePaul of Lane, County Oregon.

## Collections of Recyclables

Del Norte Disposal, is required under the garbage collection franchise to provide collection of community drop-off recycling bins in six locations throughout the County, as well as streetside community recycling bins for beverage containers. Del Norte Disposal also offers residential curbside collection of recyclable materials, though subscription to this weekly service is less than 1% of the County households. For commercial customers, Del Norte Disposal also offers collection of cardboard or office paper for not more than 75% of the cost of an equivalent size trash bin.

Redwoods United began multi-material collection of recyclables in 1998. These collections are an on-call, charge per pickup basis.

## Recovery

**Figure IV-2** shows the tonnage by material type for all materials recovered for recycling, composting, or beneficial reuse from Del Norte in 1997. Clearly, the largest tonnages recovered in 1997 are fish waste, rocks and soils. Fish waste was once processed at the landfill into a nutrient-rich cover for rapidly growing vegetation over exposed slopes at the onset of the rainy season. For the past 5 years, these materials (including shrimp shells, crab backs, and fish carcasses) have increasingly been processed by Eco-Nutrients into dried shells and fish emulsion fertilizer. The dried shells are used as a raw material in the manufacture for contact lenses and dissolving sutures, and the fish emulsion is used as a fertilizer by organic farmers. Concrete, asphalt and soils are used for road building and other structural functions at the Crescent City Landfill.

Figure IV-1

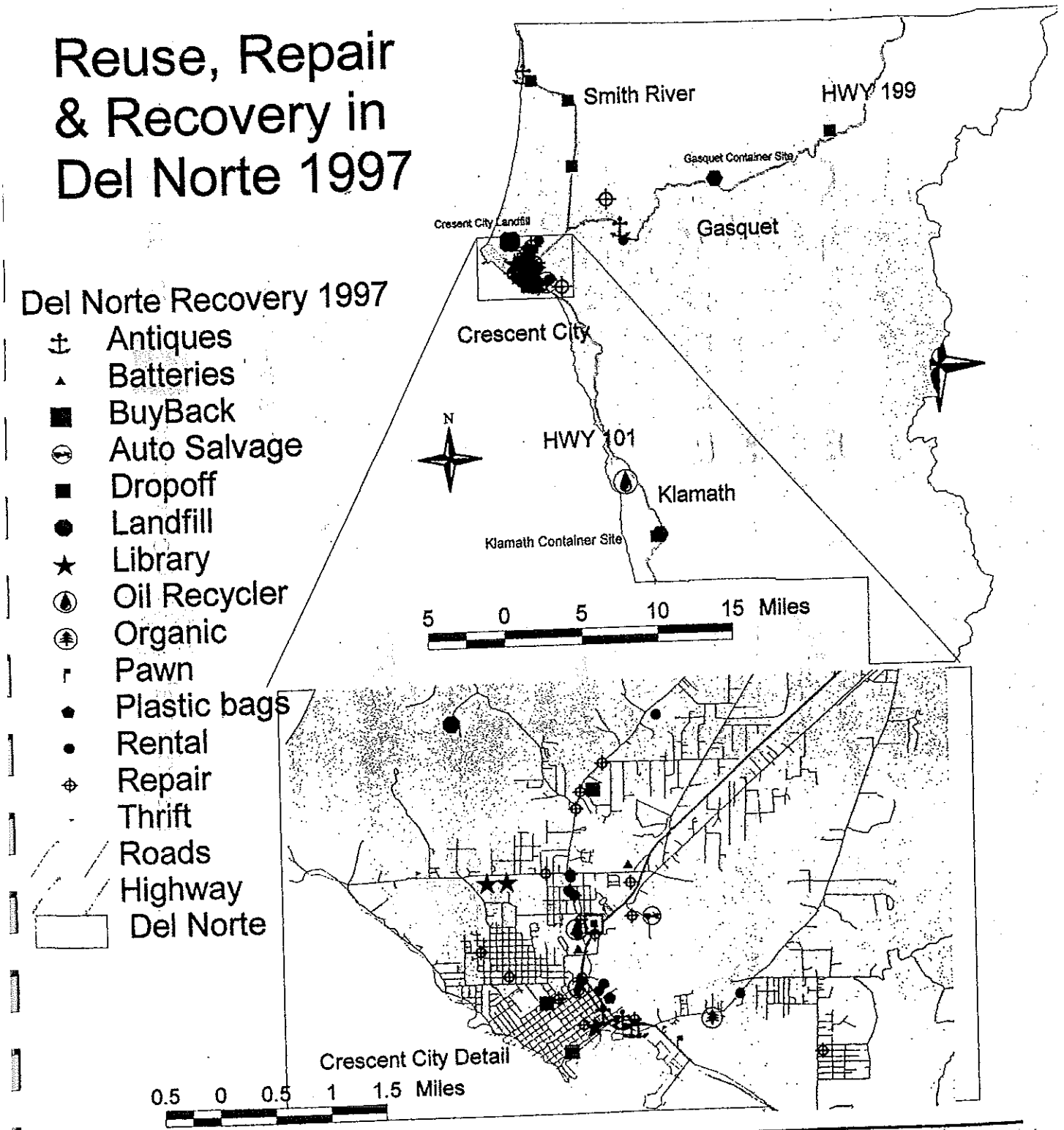
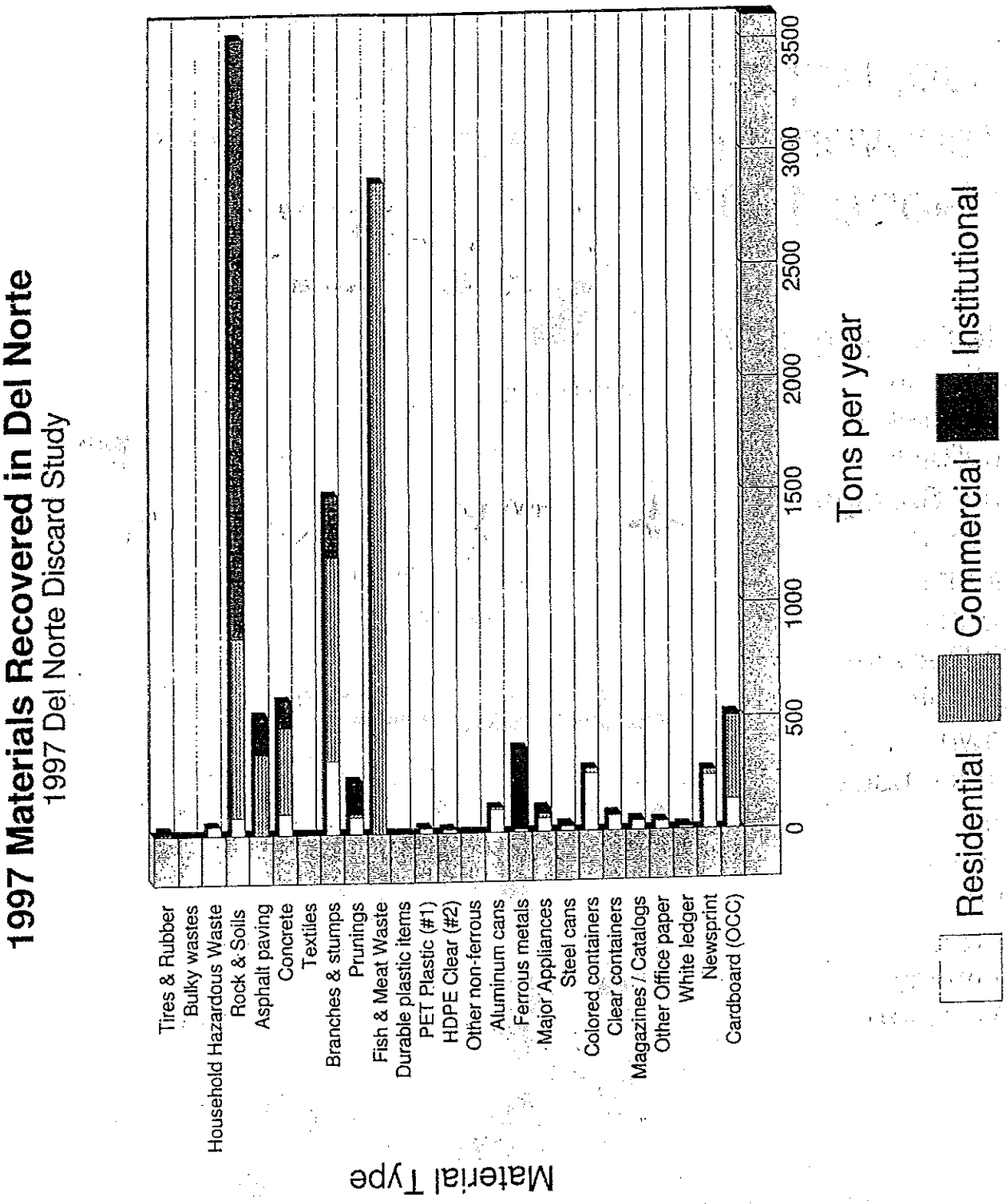


Figure IV-2


1997 Materials Recovered in Del Norte
1997 Del Norte Discard Study
Material Type
Tires & Rubber
Bulky wastes
Household Hazardous Waste
Rock & Soils
Asphalt paving
Concrete
Textiles
Branches & stumps
Prunings
Fish & Meat Waste
Durable plastic items
PET Plastic (#1)
HDPE Clear (#2)
Other non-ferrous
Aluminum cans
Ferrous metals
Major Appliances
Steel cans
Colored containers
Clear containers
Magazines / Catalogs
Other Office paper
White ledger
Newsprint
Cardboard (OCC)
0
500
1000
1500
2000
2500
3000
3500
Tons per year
Residential
Commercial
Institutional

## Processing

In 1997, Coastline Enterprises, then one of the two Buyback centers in the County where residents could get cash back for their recyclables, closed its recycling operations. The remaining Buyback, Julindra Recycling, agreed to receive, process, and market all materials which were accepted by Coastline prior to their closure so Del Norte residents, businesses, and institutions could continue their existing recycling programs.

### Challenges to Julindra

In addition to nearly doubling the volume of materials they process each month, Julindra is now also processing all materials collected by Del Norte Disposal through its community drop-off program. In short, Julindra Recycling is currently essential to nearly all recycling of newspaper, cardboard, office paper, magazines, glass, #1 (PET) plastic, #2 (HDPE) plastic, and steel cans in Del Norte County, and they will continue to be essential for the foreseeable future. If Julindra Recycling did not exist, many recycling services in Del Norte would either be discontinued or be considerably more expensive. Since 1998, Julindra Recycling has been the only Buy-back center in Del Norte County, and the only processor and baler of recyclable materials. The authors of this report made the following observations regarding Julindra:

- Julindra did not have time to set up a site-plan for increased material flow.
- Julindra did not have strong markets for some of the materials being collected.
- Market prices are low, transportation costs are high, orders for material are difficult to get.
- A marketing plan could develop strategies to move material.

Before the decision is made to invest in a collection system for an historically low-grade, low-value material (such as non-deposit plastic containers and mixed paper), the Authority should first evaluate if the material now has or ever will have a potential buyer within the region before committing the funds for collection. If not, it may be more effective to instead pursue a much more aggressive waste prevention strategy for that material type. The lower value the material type and the higher the transportation costs, the less likely that collecting a particular material type can be a long-term viable business.

The Authority should advise and assist Zero Waste businesses with contingency plans. For example, plan now for how to handle the cash flow dilemma created when all major transportation lines are closed due to winter mudslides. The Authority should plan with these businesses for their "worst case scenarios." The Authority should explore with these businesses their range of options in diversifying, changing specifications, downgrading/upgrading, stockpiling, or changing markets to ship north or ship south.

## Markets

Del Norte County is an isolated region over 350 miles from a major export port (San Francisco or Portland). The materials available to recycle are

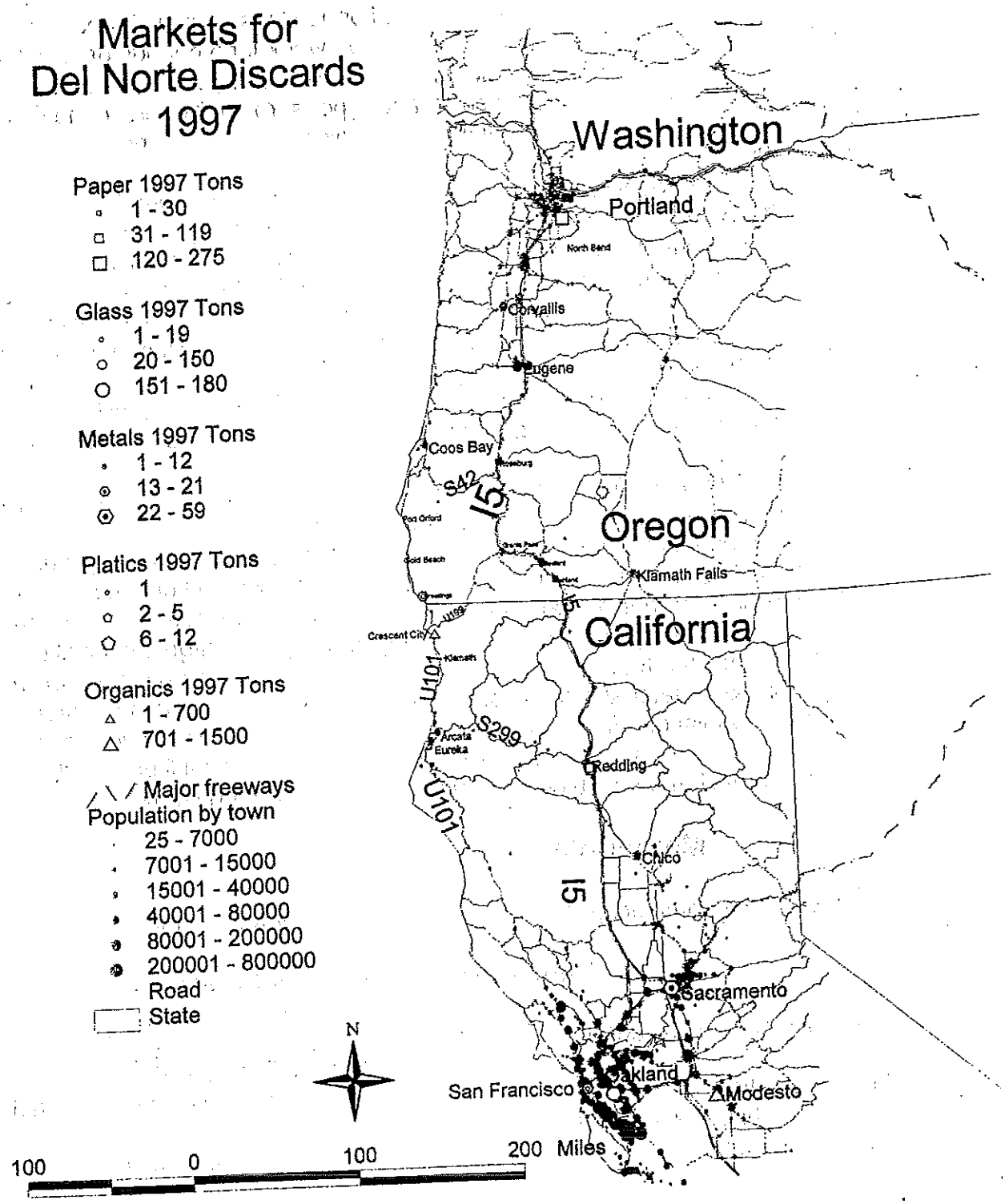
smaller amounts, compared to amounts coming from other areas. The distance to markets for materials recovered in Del Norte in most cases is also great, as indicated on the map in **Figure IV-3**.

Market destinations for some of the recyclable materials are distant and costs to ship the materials are high (about $22/ton for densified material). This can mean that, after all the costs are incurred for recycling, the recycler will lose money on the collection, processing and shipping of the material. For some materials the costs of just processing and shipping the materials cannot be recovered by selling the materials during bad markets.

Recyclables or scrap markets on the West Coast of the United States have recently depended on shipping recyclables to both export markets in Asia (Japan, Korea, Philippines, Taiwan, Indonesia, etc) and domestic mills (many who create packaging material for products that are used both domestically and for export). The economies in Asia drastically affect the prices of recyclables, especially here and the west coast of the United States in general. When Asia, or the United States, have expanding economies, the demand for recyclables such at cardboard (OCC), newspaper (ONP), office paper, aluminum, and other metals is higher. That means that they both have a place to send the materials to, a destination, and the materials have a higher value. When the economies are not doing well, stagnating or shrinking, and if industrial production goes down, then demand for recyclables goes down, and the price for these materials fall. The mills demand less of these materials for their production and increase their quality requirements for these recyclables. This can mean that some recyclables cannot find markets; they do not have a destination. It can also mean that the price received for the recyclable material does not cover the overhead costs and shipping costs of bringing that material to its market destination. If mills are demanding a higher quality recyclable for less money, it can also mean that more labor has to be used to make the material marketable. Mills and brokers may also bias their purchases toward recycling companies with large tonnages or with which they have long term relationships.

Industrial production in Asia is drastically down at this time (mid-1998) and it appears as though it will continue to go down. The 'dumping' of low cost steel by Japan, Russia and South Korea in 1998-9 also depressed the domestic market price for steel scrap and tin plated steel cans. Steel market conditions are bad, and will most likely get worse before they start to turn around. Although no one can predict very well into the future of these types of markets because of so many influences that affect prices, unless something unforeseen happens, this low cycle will continue for another 2-3 years.

Figure IV - 3



# B. Discard Generation

In 1997, Del Norte Solid Waste Management Authority staff, in cooperation with the Cadre of Corps (AmeriCorps and the California Conservation Corps) and the landfill operator, Pacific Waste Services, conducted two week-long periods of selected sorts: one week in winter and another in summer. The percentage composition from each sort was combined with tonnage records and reports from recyclers in the County to derive the tonnage of each material type being discarded and being recovered in Del Norte in 1997.

The discard generation study in 1997 consisted of two week-long sampling events. The primary purposes of the discard generation study were:

1. To determine the approximate quantity of materials which may be recovered from the stream of materials currently disposed at the Crescent City Landfill.
2. To determine which populations in Del Norte County have the greatest proportion of recoverable materials which could be targeted for waste reduction, composting or recycling programs.
3. To segregate and quantify the disposal, composting, and recycling within Crescent City, the unincorporated areas of Del Norte County, and the County as a whole.
4. To facilitate the design of waste prevention and recovery programs, as well as the Transfer Station / Materials Recovery Facility.

These quantities were determined by first conducting a discard generation study for several categories of discard generators during the wet and dry seasons (e.g. City residential, City non-residential, City self-haul, County residential, County non-residential, and County self-haul) and multiplying the percentage composition of each waste type times the total tonnage disposed during that season by that population. The tonnage for each material type is aggregated with the tonnage for that material from every other population, and a total tonnage for that material type is determined. The total annual tonnage for all material types delivered to the landfill broken down into tonnages for each material type is summarized in the discard study.

## Methodology

The process for completing this waste generation study was as follows:

### 1. Identify the populations for the sort

These populations included:

City Residential
- Franchise collection (incl. bags)
- Self-haul

County Residential
- Franchise collection (incl. bags)
- Self-haul
- Transfer stations

City Commercial
- Franchise collection
- Small bins
- Roll-offs
- Compactors
- Self-haul

Institutions
- Prison
- School district
- Harbor
- Hospital

County Commercial
- Franchise collection
- Small bins
- Roll-offs
- Compactors
- Self-haul

In addition to these categories, some additional loads were separated for further analysis. Two sorts were completed from a special collection strictly from multi-family residential locations, which include apartments and trailer parks. A separate collection route was necessary for these customers, as most of them have commercial bins which are collected as part of the commercial routes, despite the residential nature of the materials discarded.

Working with the franchised collection company, Del Norte Disposal, the Authority selected loads which were relatively pure collections from each population for each sample, and in some cases ran special collection routes to better separate generating populations (e.g. multi-family residential). Samples of approximately 200 pounds were selected from each load, and each sample was separated into the material types and weighed, resulting in a weight composition for that sample. There were a total of 36 samples during the summer and 52 during the winter sort . Although several samples included more than one generator type, 47 samples targeted residences, 56 samples targeted commercial businesses, and 23 samples targeted institutions within the County. For many jurisdictions, generating populations are divided into residential and non-residential. In Del Norte, institutions such as Pelican Bay State Prison, the Del Norte Unified School District and Sutter Coast Hospital each dispose of a significant quantity of materials. The reason for separating Institutions from Commercial is that the decision-making structure of Institutions are generally much more centralized, and so outreach and new collection programs may also be negotiated with these central decision-makers. Even identical commercial businesses, however, are scattered through the community, and are most effectively addressed through trade associations, the chamber of commerce, or targeted meetings of similar generators.

### 2. Incorporate Itemized Disposal, Community Cleanup, Collection Events, and County Disposal

Several material categories may be counted, weighed, and allocated to each population without a sort. These items are either received or charged at the landfill as separated materials, or are disposed of without charge (illegal dumping at thrift stores, hazardous materials, or County charges). They include:

| | |
|---|---|
| Materials disposed by Del Norte County (landfill owner) | Oil, batteries, paint, antifreeze<br>Large appliances, refrigerators<br>Tires (auto, truck, w/ or w/o rims) |
| Materials collected during community cleanups or dumped on thrift stores | Sludge<br>Animals<br>Brush |

### 3. Allocate tonnage by jurisdiction, season, generator, and material type

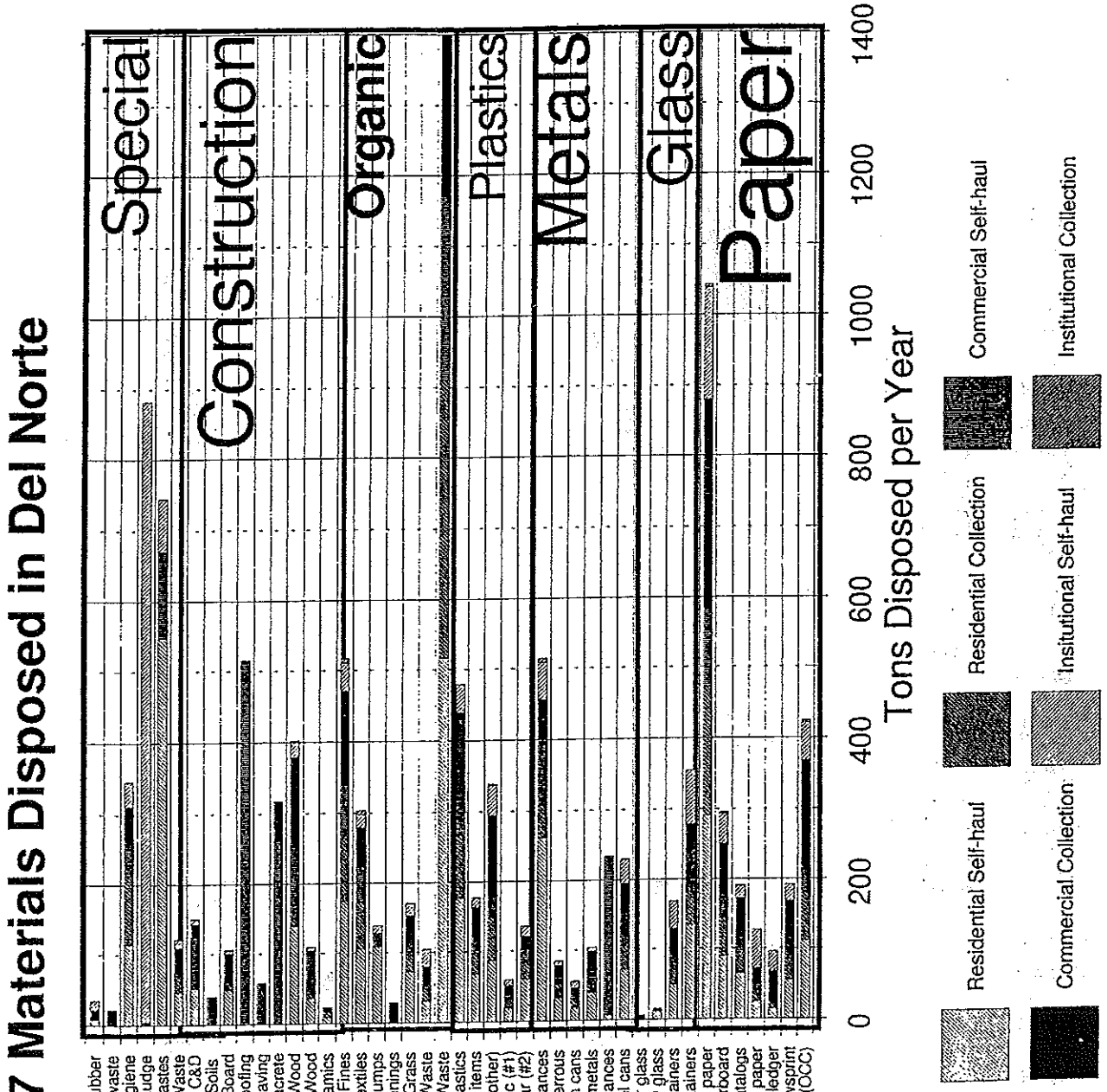
During each sampling period, gate staff at the Crescent City Landfill as well as the Gasquet Container Site and Klamath Container Site collected information regarding the point of origin for every vehicle using our disposal sites for the week-long sampling period. Authority staff then used the total annual tonnage for each generator as recorded at the landfill scale, and the percentage breakdown for that generator from each jurisdiction (point of origin) during the sampling period to determine the tonnage annually disposed by each generator population within each jurisdiction.

The seasonal tonnage for each population was multiplied times the percentage composition for each population to project the tonnage disposed of each material type by each population. The material tonnages from each population were then be added together to project the total tonnage of each material type disposed annually. As required in the amended Joint Powers Agreement, staff used origin surveys to segregate between incorporated and unincorporated areas of the County. The origin surveys identified discards coming form Crescent City, Ft. Dick, Smith River, Hiouchi, Gasquet, Klamath, other unincorporated areas of the County, and waste coming from Humboldt County or Oregon.

## 1997 Del Norte Discard Study Results

**Figure IV-4** indicates the tonnage of materials disposed and recovered by Institutional, Commercial, and Residential generators in Del Norte in 1997. **Figure IV-5** divides the total 1997 tons disposed into each material type, and further divides each material type into self-haul and collection for residential, commercial and institutional generators.

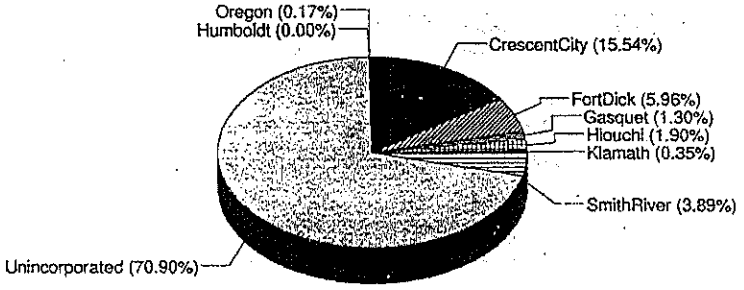
Figure IV - 4


1997 Materials Disposed in Del Norte
Special
Construction
Organic
Plastics
Metals
Glass
Paper
Tires & Rubber
Treated Medical waste
Disposable Diapers / Fem. Hygiene
Sewage Sludge
Bulky wastes
Household Hazardous Waste
Composite C&D
Rock & Soils
Gypsum Board
Asphalt roofing
Asphalt paving
Concrete
Treated Wood
Untreated Wood
Ceramics
Other and Fines
Textiles
Branches & stumps
Prunings
Leaves & Grass
Fish & Meat Waste
Food Waste
Other plastics
Durable plastic items
Film Plastics (#4 & other)
PET Plastic (#1)
HDPE Clear (#2)
Mixed metal/mat'l &small appliances
Other non-ferrous
Aluminum cans
Ferrous metals
Major Appliances
Steel cans
Other glass
Flat / Window glass
Colored containers
Clear containers
Other / Composite paper
Paperboard
Magazines / Catalogs
Other Office paper
White ledger
Newsprint
Cardboard (OCC)
Material type
0
200
400
600
800
1000
1200
1400
Tons Disposed per Year
Residential Self-haul
Residential Collection
Commercial Self-haul
Commercial Collection
Insitutional Self-haul
Institutional Collection

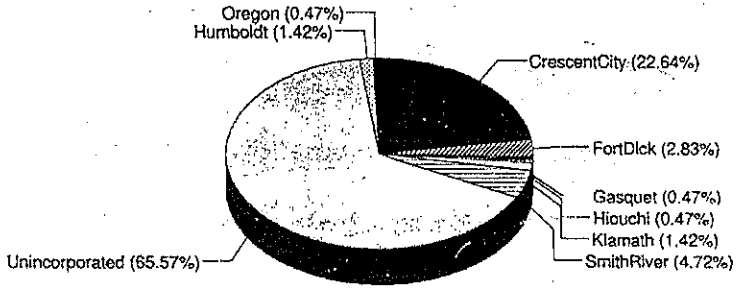
# Self Haul Vehicles

## Del Norte 1997

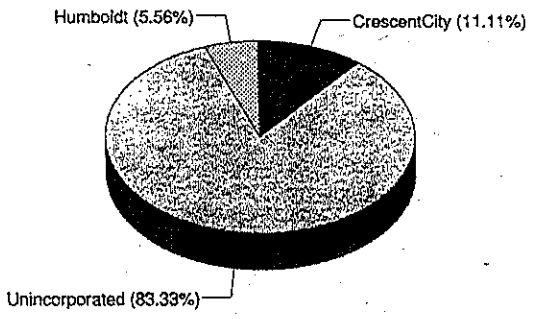
### Residential Vehicles




### Commercial Vehicles




### Institutional Vehicles




### Total

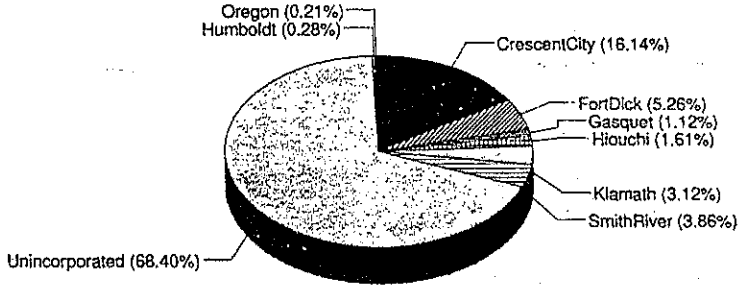
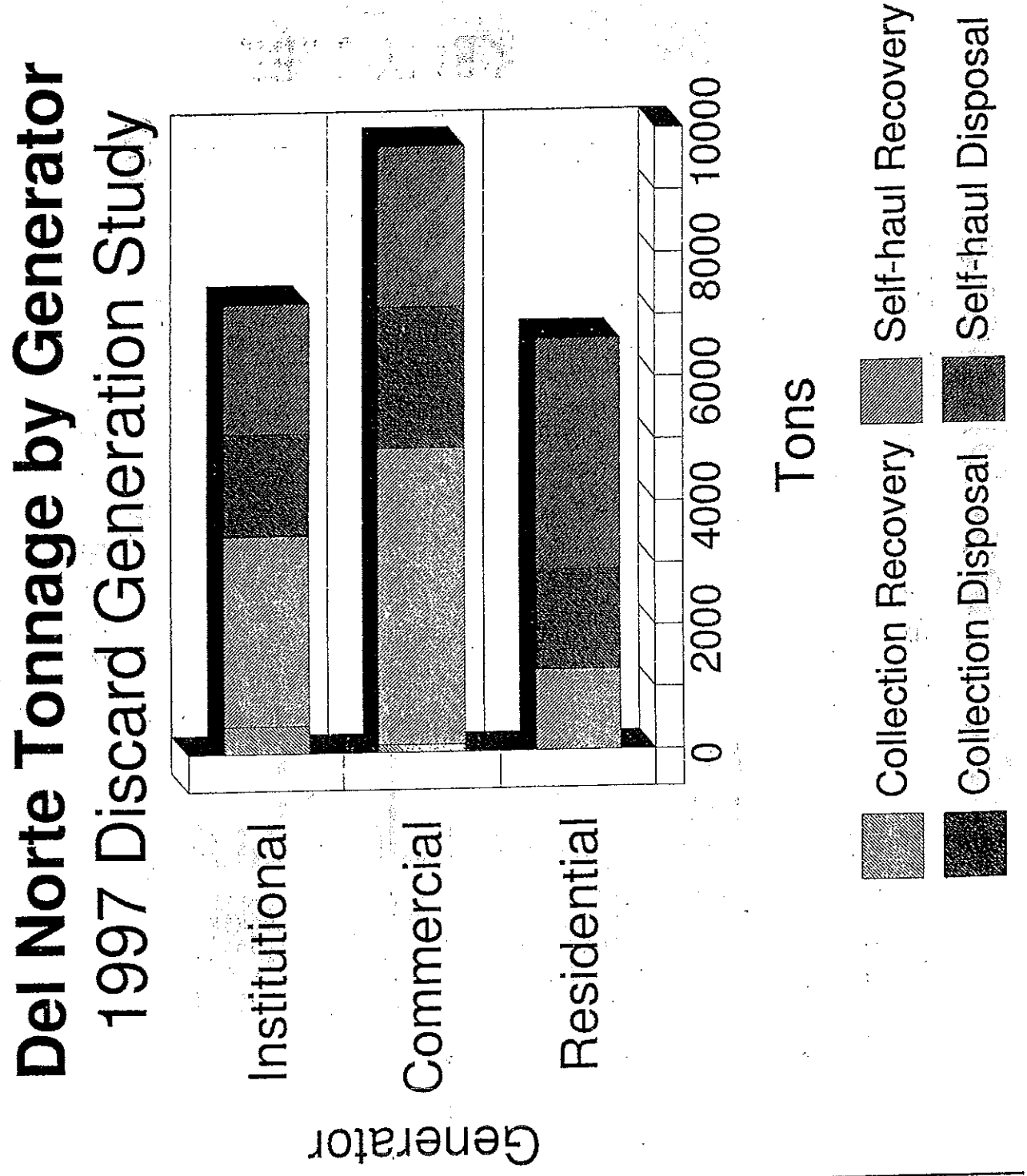



Figure IV - 5

Figure IV - 6



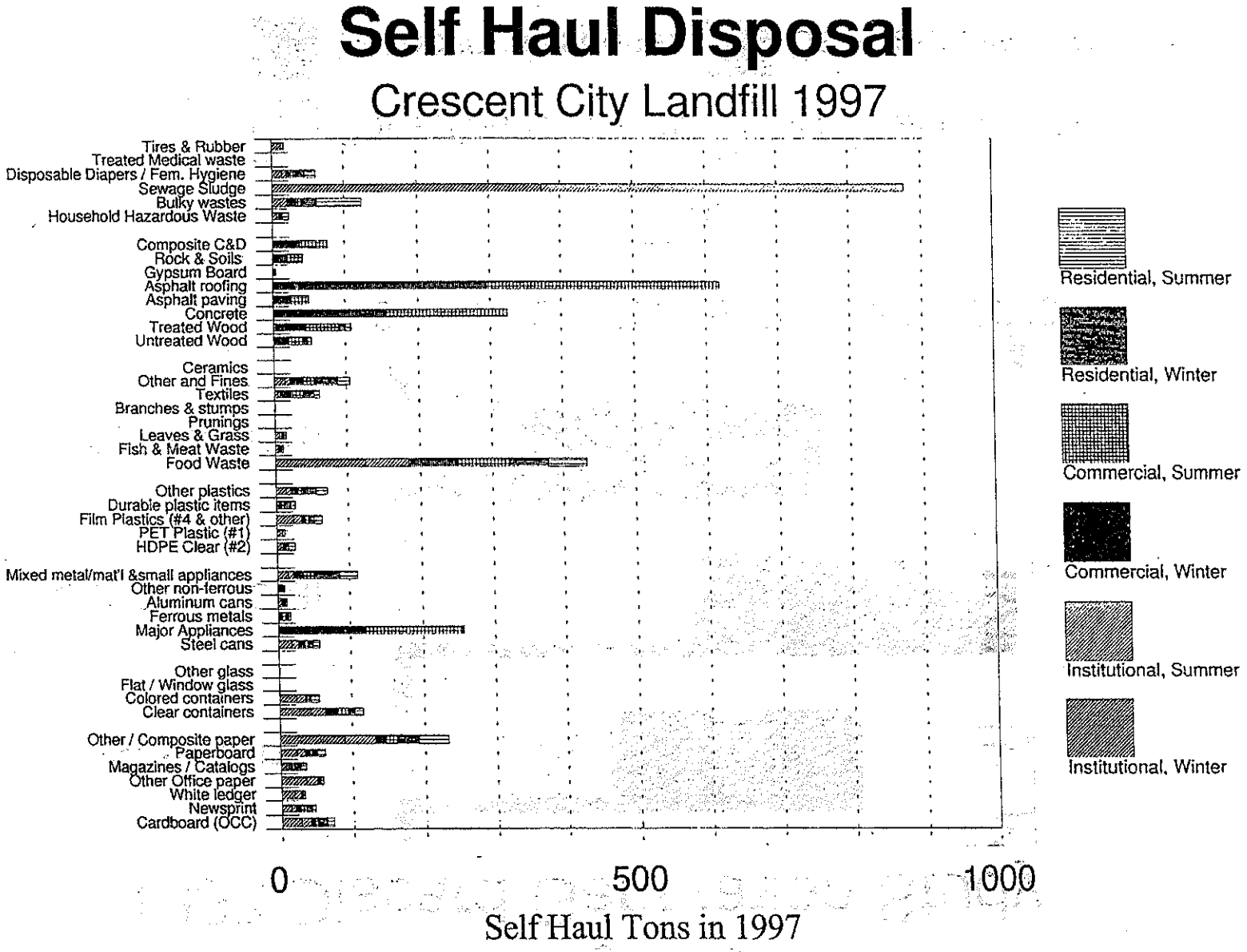



Figure IV - 7

**Figure IV-6** indicates the jurisdiction of origin for self-haul vehicles as reported during the 1997 Del Norte Discard Study. **Figure IV-7** further divides self-haul disposal into material type, and indicates winter and summer disposal for each generator category.

The following facts summarize the findings of the 1997 Del Norte Discard Study:

- Residential discards comprised just 28% of all discards. In 1997, just 25% of all residential discards were recycled.
- Non-residential (i.e. commercial and institutional) customers generated 72% of all discards.
- Commercial businesses and institutions recovered the greatest tonnage and had the greatest percentage of recovery (over 50%). The largest categories for recovery were reuse of inert materials and processing of fish waste.
- Commercial businesses and institutions also comprised 61% of the materials disposed, and thus represent the greatest opportunities for expanded recovery.
- Self-haul customers comprise approximately 88% of the traffic at disposal sites as well as approximately 60% of the tonnage disposed.
- Compared to national averages, Del Norte has very little yard debris disposed, but a higher proportion of food waste than expected. If backyard burning is banned in future, the amount of yard debris could be expected to increase.
- Construction and demolition activities have a noticeable impact on the amount of material disposed in Del Norte, and thus pre-planning for recovery of demolition and remodeling debris could noticeably reduce disposal.

## A Critique of Discard Studies

The CIWMB has conducted a variety of studies over the years identifying the shortcomings of discard generation studies. The principle impacts discarded materials may have on the community and environment - but which would not be detected by a discard generation study - include:

### 1. Illegal Dumping and Litter

As illegal dumping occurs generally in areas which are rarely patrolled, assessing the magnitude of such activities and the quantity and type of material is difficult, and would not be detected by sorting discards at the point of generation or at the point of disposal. In Del Norte, common materials which are illegally dumped include tires, metal appliances, and abandoned vehicles (frequently filled with household trash). In 1999, the County Code Enforcement officer responded to 123 visual blight complaints and 215 dumping complaints, and these two issues comprised nearly 48% of local code enforcement responses for this Deputy[13]. Litter tends to

include lightweight windblown items such as plastic bags, fast-food packaging, beverage containers, and small items thrown from vehicles.

### 2. Stockpiling or Accumulation

Whether motivated by high disposal costs, limited disposal options or the belief that something "might be useful someday," a large portion of some materials may be stockpiled by the generator. In Del Norte, materials which are regularly stockpiled include materials which are subject to per-item charges, including tires, refrigerators and appliances, automotive bodies and parts, hazardous materials, computers and electronics, and household trash. The quantity of stockpiled material is not included in a discard study, because these materials are not yet discarded.

### 3. Backyard Burning

In Del Norte, backyard burning of household trash is allowed and widely practiced, both in burn barrels and in burn piles. In addition, there is agricultural burning. Some local fire protection districts, the California Department of Forestry, and the Forest Service each currently issue permits for these activities. The Discard Study did not account for the materials currently being burned in piles, barrels or fireplaces. In the event such burning becomes further restricted or prohibited, the increase in the recovery (where programs exist) or disposal of brush, paper, and other burnable materials could be expected to increase significantly.

### 4. Disposal Pulses & Seasonality

While the discard generation sorts were conducted during the wet season with school in session and during the dry season when larger fractions of disposal are due to construction and tourism, many pulses of specific types of waste may have been overlooked. For example, the packaging waste associated with the Christmas and New Year holidays, the demolition of major structures, and the disposal of film plastic used to cover farms during fumigation, all may occur in such a way that two week-long sorts during a single year may not accurately characterize the disposal impacts of these activities.

### 5. Material Impacts

A discard generation study analyzes the materials discarded as if the only relevant consideration is weight. Some materials like polyvinyl chloride (PVC) have significant impacts associated with their manufacture. Some materials like pesticides can have significant impacts associated with their use. Some materials, like medical waste, can be a cause for concern if they are not properly contained before disposal. Some materials, like used PCB's, dioxins and motor oil, can cause great environmental

damage if they are released to the environment. Some materials, like plastics, occupy a relatively large volume for their weight. None of these issues are considered within a discard generation study.

### 6. Larger Uncertainties for Smaller Fractions

Mobilizing and conducting a sort is a considerable effort. As all Discard Generation Studies derive the projected tonnages of each material type by first determining the percentage composition, uncertainties in those percentages can lead to large uncertainties in the projected tonnage. Materials which comprise less than one percent of the discard stream can have uncertainties in excess of 300%, which is like saying "we looked in our community trash can and found 3 tons of non-ferrous metal, give or take 9 tons." While increasing the number of sorts would improve the accuracy of the percentage compositions, it also significantly increases the level of effort and cost of completing the sorts. Thus, a discard study based on a community-wide trash sort may not be the most accurate method of projecting the amount of that material which may be recovered if that material comprises a relatively small fraction of the materials stream.

### 7. Not Seeing the Function for the Material

By their nature, discard sorts categorize by materials not function. Although old doors and railroad ties may both be made of treated wood, they have very different uses, and thus different potentials for reuse and recovery. Also, as materials are most often sorted at the point of disposal, many loads contain materials which may have been very reusable when placed at the curb, but are not reusable having been compacted within a garbage truck. Thus, a discard generation study usually does not give a very accurate picture of how much discarded material might be reusable or repairable if a reuse and repair infrastructure were to be developed or expanded.

# V. Service Voids Analysis

The next step towards Zero Waste is to analyze where the opportunities lie for future recovery. Clearly, if there is no known recovery market for a material, it has virtually no chance of being recovered. Each community has a recovery Service Void for those materials which have no realistic destination other than the landfill. Thus, identifying and analyzing these Service Voids provides a systematic mechanism for evaluating the potential for expanded recovery.

## A. Goals & Objectives

The goals of a discard recovery service voids analysis are:

1. To systematically select and prioritize target materials and their associated waste reduction, recovery, processing and marketing strategies,
2. To identify service voids: materials for which there is no current mechanism for waste reduction, recovery or marketing, essentially requiring that this material becomes a waste,
3. To establish a method by which local and state agencies responsible for implementing waste reduction and recovery programs may agree on priorities and expectations for future recovery programs, and
4. To identify service opportunities: materials for which there is some waste reduction and/or recovery mechanism available within the region, though the portion of material being wasted is significant enough to warrant expansion and/or diversification of the recovery programs for that material.

## B. Methodology

### Summarize Existing Programs

After the discard generation study has been completed and evaluated, the next step in completing a Service Voids Analysis is to use a spreadsheet to list all material types and waste reduction and collection programs which target those materials, as indicated on **Table V-1: Programs by Target Material.**' Materials for which there are no waste reduction or collection programs are labeled 'Service Void.' Materials which had existing collection programs - yet which still comprised more than 1% of the disposal stream - were labeled as 'Service Opportunities.' Totaling all these percentages together reveals that over 91% of the materials disposed are either 'Service Voids' or 'Service Opportunities.' The remaining 9% of the disposed materials are the relatively small (Service Opportunity) fractions of the disposal stream which could potentially be recovered through existing programs, but are not yet.

The reader may notice that separate columns are provided to number the material type, waste reduction or collection program, and the weight percentage of each material type. This is to facilitate sorting, so this sheet can readily provide a list of materials and the programs which target them.

Copying and pasting this spreadsheet onto the next page, shown as **Table V-2: Existing Collection Programs**, the programs are here grouped together with the materials which they target. For all 'Service Voids' and 'Service Opportunities,' the amount of each material type, as a percentage of the total material disposed, is also reported in this table. We then add columns to reflect 'Issues' which may result in an underestimation of the quantity of material which could theoretically be collected, 'Facilities' which are required to continue existing programs, and local 'Policies' which may affect the economics of recovery. For example, the Authority has a policy for reuse, recycling, or composting businesses which accept materials from the public: they are eligible for free disposal of unrecoverable materials which are illegally dumped at their business.

## Summarize Service Voids and Opportunities

The next step in the Service Voids Analysis is to copy the portion of this spreadsheet table containing 'Summary Voids' and 'Service Opportunities' onto the next page, shown as **Table V-3: Summary of Service Voids and Opportunities** and sort in descending order, by the percentage each material type comprises of the total disposal stream. This is a crude method of identifying which materials offer the greatest opportunities to make large strides towards Zero Waste. Next, we add two columns to describe the 'Future Programs' which will target that material, and the 'Facility' necessary to implement each. The reader will note that most programs target more than one material. The specific programs selected will of course vary between communities, depending on what are the existing recovery programs and facilities, what materials are priorities for that community, and the reuse, recovery and processing technologies which can be deployed to reduce waste and increase recovery.

## Identify Target Programs

The final step in the Voids Analysis is identifying and prioritizing programs designed to reduce, reuse, recycle or compost each material type. These programs are identified based on knowledge of locally-available or readily developed markets for recovered materials. Generally, if an end-use market demand is uncertain, the first step in establishing a recovery program is market research. For example, while relatively low-tech equipment may be used to produce compost from yard debris, food, and paper, the market demand within the area for the resulting compost that could be cost-effectively transported is unknown. So although compost markets are already established in other cities, further market research regarding the use of such compost in our region would be the first step to develop such a municipal composting operation.

To begin this final step, data from the **'Table V-3 Summary of Service Voids and Opportunities'** was copied, and a column was inserted so that each Future Program could be assigned a 'Priority' number. The priority number is an assessment of the relative urgency and/or ease of implementing the program, and the same Priority number is assigned to each program, regardless of how many materials would be reduced or recovered by such a program. The programs are then sorted by priority, and are listed with each material targeted by the program. The result is displayed as **Table V-4 Target Recovery Programs Based on Voids Analysis.**

Then we add together the weight percent disposal of each material to give an estimate of the total percentage of the disposal stream to be targeted by each program. Just as existing programs have Service Opportunities, these priority target programs also generally should not be expected to necessarily recover all of their target materials. The mechanisms which lead to a less than 100% capture include:

1. The program only reaches a fraction of the populations which regularly dispose of that material. This is reflected in the column labeled '% of Generation Targeted.' This number is also derived from the Discard Study, and is calculated by dividing the total tons of the target material type disposed by the populations most likely to be receptive to the new program, divided by the total tons of that material disposed.
2. Even for the target participants, the new program captures less than 100% of the material. This is reflected in the column labeled 'Assumed Program Capture.' For some materials this percentage indicates that less than 100% of that material type could be recovered by the proposed program. For example, 'Other / Composite Paper' includes asceptic packaging and other paper/plastic composites which cannot be readily recovered under the Food / Paper composting program. For other materials, even target generators may have sections of their population which forget or refuse to participate in the program, and so an 80% recovery rate from these generators is a good approximation of the program potential.

Some materials like Asphalt Roofing, may have a good potential for recovery if an end-use market can be identified or developed. Other materials have potential end-uses, such as using branches and stumps have a potential end-use (value-added wood products or energy), but more research is required to determine which recovery program would most effectively recover this small portion of the disposal stream.

Other materials, such as other plastics or disposable feminine hygeine products, have little or no known viable recovery programs. These materials will fall into a general policy for Materials without Markets (described in section VI.D), for which the Authority will engage major manufacturers to develop recovery programs or take actions to collect the disposal costs for these items as close as possible to the point of purchase.

### Repeat the Service Voids Analysis after Implementing Target Programs

Multiplying the '% Disposal' times the '% of Generation Targeted' times the 'Assumed Program Capture' results in the 'Projected Recovery of Disposed Material.' The difference between the '% Disposal' and the 'Projected Recovery of Disposed Material' is indicated as 'Future Service Opportunity.' The reader will note that although the Service Voids Analysis targeted over 90% of the material being wasted, the priority programs can only reasonably be expected to recover an additional 41% of the material disposed. This Service Voids Analysis process may be repeated after these priority programs are implemented to determine which additional programs may most rapidly move towards Zero Waste.

## C. Results

For Del Norte in 1999, the Service Voids Analysis resulted in identifying the following target recovery programs, in order of priority:

1. Land Application of Sewage Sludge;
2. Establishing dropoff areas for Ferrous Metals, Mattresses Box Springs, and Furniture, and Non-ferrous metals;
3. Recovery of recyclables from Commercial loads both through commercial recyclables collection programs and through picking recyclable materials from targeted commercial loads delivered to the Transfer Station / Materials Recovery Facility;
4. Establishment and promotion of mechanisms to expand recovery of metal appliances and textiles from thrift stores;
5. After demonstrating the viability of a local market for the finished product, establishment of a facility capable of composting yard debris, food, and paper;
6. Establishing a salvage, reuse, and resale facility for construction materials; and
7. Establishing periodic collection events or a dropoff mechanism for collecting electronic equipment.

# Table V - 1

## Programs by Target Material

| Sorted by Material | Collection | Description | % Disposal 1997 | Issues |
|---|---|---|---|---|
| Cardboard | 9 | Dropoff | | |
| Cardboard | 11 | Separate collection | | |
| Cardboard | 99 | Service Opportunity | 3.79% | |
| Newsprint | 7 | Target Dropoff | | |
| Newsprint | 9 | Dropoff | | |
| Newsprint | 10 | Curbside | | |
| Newsprint | 99 | Service Opportunity | 1.46% | |
| White ledger | 11 | Separate collection | | |
| Other office paper | 95 | Service Void | 1.00% | |
| Magazines / Catalogs | 9 | Dropoff | | |
| Magazines / Catalogs | 99 | Service Opportunity | 1.43% | |
| Paperboard | 95 | Service Void | 2.35% | |
| Other / Composite paper | 95 | Service Void | 9.55% | |
| Clear glass | 8 | Buyback | | |
| Clear glass | 9 | Dropoff | | |
| Clear glass | 10 | Curbside | | |
| Clear glass containers | 99 | Service Opportunity | 2.55% | |
| Green glass | 8 | Buyback | | |
| Brown glass | 8 | Buyback | | |
| Green glass | 9 | Dropoff | | |
| Brown glass | 9 | Dropoff | | |
| Mixed glass | 10 | Curbside | | |
| Mixed glass containers | 99 | Service Opportunity | 1.21% | |
| Window glass | 95 | Service Void | 0.11% | |
| Other glass | 95 | Service Void | 0.04% | |
| Steel cans | 9 | Dropoff | | |
| Steel cans | 10 | Curbside | | |
| Steel cans | 99 | Service Opportunity | 1.65% | |
| Appliances | 1 | Thrift stores | | |
| Appliances | 16 | Landfill dropoff | | Accumulation |
| Appliances | 99 | Service Opportunity | 1.68% | |
| Auto bodies | 5 | Target Dropoff | | Accumulation |
| Ferrous metals | 95 | Service Void | 0.75% | Accumulation |
| Aluminum cans | 8 | Buyback | | |
| Aluminum cans | 9 | Dropoff | | |
| Aluminum cans | 10 | Curbside | | |
| Non-ferrous | 95 | Service Void | 0.61% | Accumulation |
| Small appliances | 1 | Thrift stores | | |
| Small appliances | 99 | Service Opportunity | 3.70% | Accumulation |
| #2 HDPE Colored | 9 | Dropoff | | |
| #2 HDPE Natural | 9 | Dropoff | | |
| #2 HDPE natural | 99 | Service Opportunity | 1.01% | |
| # 1 PET (CRV) | 8 | Buyback | | |
| # 1 PET Plastic | 9 | Dropoff | | |
| #1 PET Plastic | 10 | Curbside | | |
| #4 Plastic bags | 13 | Target Dropoff | | |
| Film plastics | 99 | Service Opportunity | 3.16% | Litter |
| Durable plastic items | 1 | Thrift stores | | |
| Packing peanuts | 6 | Target Dropoff | | Litter |
| Other plastics | 95 | Service Void | 3.78% | Litter + health |
| Food waste | 0 | On-site Training | | |
| Food waste | 15 | Target Dropoff | | |
| Food waste | 99 | Service Opportunity | 17.85% | Health |
| Fish and meat waste | 11 | Separate collection | | |
| Leaves & Grass | 0 | On-site Training | | |
| Leaves & Grass | 99 | Service Opportunity | 1.24% | |
| Prunings | 14 | Target Dropoff | | |
| Prunings | 17 | Landfill dropoff | | |
| Branches & stumps | 14 | Target Dropoff | | |
| Branches & stumps | 99 | Service Opportunity | 1.00% | |
| Textiles | 1 | Thrift stores | | |
| Textiles | 99 | Service Opportunity | 3.11% | Accumulation |
| Fines | 99 | Service Opportunity | 4.12% | |
| Ceramics | 1 | Thrift stores | | |
| Ceramics | 95 | Service Void | 0.17% | Accumulation |
| Untreated wood | 95 | Service Void | 0.79% | Accumulation |
| Treated wood | 95 | Service Void | 2.91% | |
| Concrete | 18 | Landfill dropoff | | |
| Asphalt paving | 18 | Landfill dropoff | | |
| Asphalt Roofing | 95 | Service Void | 3.70% | |
| Gypsum board | 95 | Service Void | 0.76% | |
| Rock & soils | 18 | Landfill dropoff | | |
| Composite C & D | 95 | Service Void | 1.09% | |
| Used motor oil | 3 | Target Dropoff | | |
| Rechargeable batteries | 4 | Target Dropoff | | Accumulation |
| Household Hazardous W | 20 | Collection Event | | Health + Accumulation |
| Mattresses & Furniture | 99 | Service Opportunity | 5.35% | Accumulation |
| Sewage sludge | 95 | Service Void | 6.54% | Urgent |
| Disposable Diapers / Fe | 95 | Service Void | 2.49% | Health |
| Treated medical waste | 95 | Service Void | 0.39% | Health |
| Tires | 18 | Landfill dropoff | | Accumulation |
| Tires | 20 | Collection Event | | Accumulation |
| Total % of Disposal Included in Voids Analysis | | | 91.35% | |

# Table V - 2

## Existing Collection Programs

| Material | Sorted by Program | % Disposal | Issues | Facility | Policy / Program |
|---|---|---|---|---|---|
| Food waste | On-site Training | | | Garden | Compost Workshops |
| Leaves & Grass | On-site Training | | | Garden | Compost Workshops |
| Appliances | Thrift stores | | | Larry's secondhand | Residue support |
| Small appliances | Thrift stores | | | 2 locations | Residue support |
| Durable plastic items | Thrift stores | | | 3 locations | Residue support |
| Textiles | Thrift stores | | | 5 locations | Residue support |
| Ceramics | Thrift stores | | | 3 locations | Residue support |
| Cardboard | Separate collection | | | Julindra | Residue support |
| White ledger | Separate collection | | | Julindra | Residue support |
| Fish and meat waste | Separate collection | | | EcoNutrients | Initial Assistance |
| Used motor oil | Target Dropoff | | | 5 locations | Used Oil Program |
| Rechargeable batteries | Target Dropoff | | Accumulation | 2 locations | Promotions |
| Auto bodies | Target Dropoff | | Accumulation | A-1 Auto Salvage | Automobile Abatement |
| Packing peanuts | Target Dropoff | | Litter | 2 locations | Promotions |
| Newsprint | Target Dropoff | | | Redwood United | Promotions |
| Clear glass | Buyback | | | Julindra | Residue support |
| Green glass | Buyback | | | Julindra | Residue support |
| Brown glass | Buyback | | | Julindra | Residue support |
| Aluminum cans | Buyback | | | Julindra | Residue support |
| # 1 PET (CRV) | Buyback | | | Julindra | Residue support |
| Cardboard | Dropoff | | | Julindra | Residue support |
| Newsprint | Dropoff | | | Julindra | Residue support |
| Magazines / Catalogs | Dropoff | | | Julindra | Residue support |
| Clear glass | Dropoff | | | Julindra | Residue support |
| Green glass | Dropoff | | | Julindra | Residue support |
| Brown glass | Dropoff | | | Julindra | Residue support |
| Steel cans | Dropoff | | | Julindra | Residue support |
| Aluminum cans | Dropoff | | | Julindra | Residue support |
| #2 HDPE Colored | Dropoff | | | Julindra | Residue support |
| #2 HDPE Natural | Dropoff | | | Julindra | Residue support |
| # 1 PET Plastic | Dropoff | | | Julindra | Residue support |
| Newsprint | Curbside | | | Julindra | Residue support |
| Clear glass | Curbside | | | Julindra | Residue support |
| Mixed glass | Curbside | | | Julindra | Residue support |
| Steel cans | Curbside | | | Julindra | Residue support |
| Aluminum cans | Curbside | | | Julindra | Residue support |
| #1 PET Plastic | Curbside | | | Safeway | Promotions |
| #4 Plastic bags | Target Dropoff | | | Hambro | Promotions |
| Prunings | Target Dropoff | | | Hambro | Promotions |
| Branches & stumps | Target Dropoff | | | Food bank | |
| Food waste | Target Dropoff | | Accumulation | Landfill Recycling | Landfill Operations |
| Appliances | Landfill dropoff | | Accumulation | Landfill Reuse | Landfill Operations |
| Tires | Landfill dropoff | | | Landfill Burn | Landfill Operations |
| Prunings | Landfill dropoff | | | Landfill Roads | Landfill Operations |
| Concrete | Landfill dropoff | | | Landfill Roads | Landfill Operations |
| Asphalt paving | Landfill dropoff | | | Landfill Roads | Landfill Operations |
| Rock & soils | Landfill dropoff | | | | |
| Household Hazardous W | Collection Event | | Health + Accum | RRD | HHW Program |
| Tires | Collection Event | | Accumulation | Tires | Tire Grant |
| Other office paper | Service Vold | 1.00% | | | |
| Paperboard | Service Vold | 2.35% | | | |
| Other / Composite paper | Service Vold | 9.55% | | | |
| Window glass | Service Vold | 0.11% | | | |
| Other glass | Service Vold | 0.04% | | | |
| Ferrous metals | Service Vold | 0.75% | Accumulation | | |
| Non-ferrous | Service Vold | 0.61% | Accumulation | | |
| Other plastics | Service Vold | 3.79% | Litter + health | | |
| Ceramics | Service Vold | 0.17% | Accumulation | | |
| Untreated wood | Service Vold | 0.79% | Accumulation | | |
| Treated wood | Service Vold | 2.91% | | | |
| Asphalt Roofing | Service Vold | 3.70% | | | |
| Gypsum board | Service Vold | 0.76% | | | |
| Composite C & D | Service Vold | 1.09% | | | |
| Sewage sludge | Service Vold | 6.54% | Urgent | | |
| Disposable Diapers / Fe | Service Vold | 2.49% | Health | | |
| Treated medical waste | Service Vold | 0.39% | Health | Landfill | Disposal |
| Cardboard | Service Opportunity | 3.79% | | | |
| Newsprint | Service Opportunity | 1.46% | | | |
| Magazines / Catalogs | Service Opportunity | 1.43% | | | |
| Clear glass containers | Service Opportunity | 2.55% | | | |
| Mixed glass containers | Service Opportunity | 1.21% | | | |
| Steel cans | Service Opportunity | 1.65% | | | |
| Appliances | Service Opportunity | 1.68% | | | |
| Small appliances | Service Opportunity | 3.70% | Accumulation | | |
| #2 HDPE natural | Service Opportunity | 1.01% | | | |
| Film plastics | Service Opportunity | 3.16% | Litter | | |
| Food waste | Service Opportunity | 17.85% | Health | | |
| Leaves & Grass | Service Opportunity | 1.24% | | | |
| Branches & stumps | Service Opportunity | 1.00% | | | |
| Textiles | Service Opportunity | 3.11% | Accumulation | | |
| Fines | Service Opportunity | 4.12% | | | |
| Mattresses & Furniture | Service Opportunity | 5.35% | Accumulation | | |
| **Total Service Targets** | | **91.35%** | | | |

Table V - 3

# Summary of Service Voids and Opportunities

| Material | Existing Program | Sorted by % Disposal | Issues | Future Program | Facility |
|---|---|---|---|---|---|
| Food waste | Service Opportunity | 17.85% | Health | Food / Paper | Composting |
| Other / Composite paper | Service Void | 9.55% | | Food / Paper | Composting |
| Sewage sludge | Service Void | 6.54% | Urgent | Land Application | Land Application |
| Mattresses & Furniture | Service Opportunity | 5.35% | Accumulation | LF Dropoff | LF Container |
| Fines | Service Opportunity | 4.12% | | Food / Paper | Composting |
| Cardboard | Service Opportunity | 3.79% | | Commercial | TS / MRF |
| Other plastics | Service Void | 3.79% | Litter + health | Commercial | TS / MRF |
| Small appliances | Service Opportunity | 3.70% | Accumulation | Thrift | Thrift Dropoff |
| Asphalt Roofing | Service Void | 3.70% | | C & D Recovery | Program Dev't |
| Film plastics | Service Opportunity | 3.16% | Litter | | |
| Textiles | Service Opportunity | 3.11% | Accumulation | Thrift | Thrift Dropoff |
| Treated wood | Service Void | 2.91% | | C & D Recovery | C & D Resale |
| Clear glass containers | Service Opportunity | 2.55% | | | |
| Disposable Diapers / Fem Hygiene | Service Void | 2.49% | Health | | |
| Paperboard | Service Void | 2.35% | | Food / Paper | Composting |
| Appliances | Service Opportunity | 1.68% | | | |
| Steel cans | Service Opportunity | 1.65% | | | |
| Newsprint | Service Opportunity | 1.46% | | Commercial | TS / MRF |
| Magazines / Catalogs | Service Opportunity | 1.43% | | Commercial | TS / MRF |
| Leaves & Grass | Service Opportunity | 1.24% | | Food / Paper | Composting |
| Mixed glass containers | Service Opportunity | 1.21% | | | |
| Composite C & D | Service Void | 1.09% | | C & D Recovery | C & D Res Residue support |
| #2 HDPE natural | Service Opportunity | 1.01% | | | |
| Other office paper | Service Void | 1.00% | | Commercial | TS / MRF |
| Branches & stumps | Service Opportunity | 1.00% | | | |
| Untreated wood | Service Void | 0.79% | Accumulation | C & D Recovery | C & D Resale |
| Gypsum board | Service Void | 0.76% | | C & D Recovery | C & D Resale |
| Ferrous metals | Service Void | 0.75% | Accumulation | LF Dropoff | |
| Non-ferrous | Service Void | 0.61% | Accumulation | LF Dropoff | |
| Treated medical waste | Service Void | 0.39% | Health | Handling | |
| Ceramics | Service Void | 0.17% | Accumulation | | |
| Window glass | Service Void | 0.11% | | C & D Recovery | C & D Resale |
| Other glass | Service Void | 0.04% | | | |
| **Total Service Voids & Opportunities** | | **91.35%** | | | |

# Table V - 4

## Targeted Recovery Programs Based on Voids Analysis

| Material | % Disposal | Issues | Sorted by Priority | Program | Facility | % of Generation Targeted | Assumed Program Capture | Projected Recovery of Disposed Material | Future Service Opportunity - Disposed after Program Implemented | Primary Generator of Future Disposal after Program Implemented |
|---|---|---|---|---|---|---|---|---|---|---|
| Sewage sludge | 6.54% | Urgent | 1 | Land Application | Land Application | 100% | 100% | 6.54% | 0.00% | |
| Mattresses & Furniture | 5.35% | Accumulation | 2 | LF Dropoff | LF Container | 25% | 70% | 0.94% | 4.41% | Compacted Collection |
| Ferrous metals | 0.75% | Accumulation | 2 | LF Dropoff | LF Location | 16% | 80% | 0.10% | 0.65% | Compacted Collection |
| Non-ferrous | 0.61% | Accumulation | 2 | LF Dropoff | LF Location | 11% | 80% | 0.05% | 0.56% | Franchise Collection |
| Cardboard | 3.79% | | 3 | Commercial | TS / MRF | 70% | 80% | 2.13% | 1.66% | Residential Collection for Disposal |
| Magazines / Catalogs | 1.43% | | 3 | Commercial | TS / MRF | 67% | 80% | 0.77% | 0.66% | Residential Collection for Disposal |
| Other office paper | 1.00% | | 3 | Commercial | TS / MRF | 57% | 80% | 0.46% | 0.54% | Residential Collection for Disposal |
| Film plastics | 3.16% | Liter | 3 | Commercial | TS / MRF | 68% | 20% | 0.42% | 2.74% | EPR + Collection for Disposal |
| Clear glass containers | 2.55% | | 3 | Commercial | TS / MRF | 49% | 30% | 0.37% | 2.18% | Residential Collection for Disposal |
| Newsprint | 1.46% | | 3 | Commercial | TS / MRF | 29% | 80% | 0.34% | 1.12% | Residential Collection for Disposal |
| #2 HDPE natural | 1.01% | | 3 | Commercial | TS / MRF | 40% | 80% | 0.32% | 0.69% | Residential Collection for Disposal |
| Steel cans | 1.65% | | 3 | Commercial | TS / MRF | 47% | 30% | 0.23% | 1.42% | Residential Collection for Disposal |
| Mixed glass containers | 1.21% | | 3 | Commercial | TS / MRF | 56% | 30% | 0.20% | 1.01% | Residential Collection for Disposal |
| Appliances | 1.68% | | 4 | Thrift | Thrift Dropoff | 92% | 80% | 1.23% | 0.45% | Compacted Collection |
| Textiles | 3.11% | Accumulation | 4 | Thrift | Thrift Dropoff | 48% | 70% | 1.04% | 2.07% | Collection & Self-haul disposal |
| Food waste | 17.85% | Health | 5 | Food / Paper | Composting | 83% | 80% | 11.80% | 6.05% | Self-haul Residential |
| Other / Composite paper | 9.55% | | 5 | Food / Paper | Composting | 92% | 40% | 3.53% | 6.02% | EPR + Self-haul Residential & Commercial |
| Fines | 4.12% | | 5 | Food / Paper | Composting | 89% | 60% | 2.20% | 1.92% | Self-haul Residential |
| Paperboard | 2.35% | | 5 | Food / Paper | Composting | 92% | 80% | 1.72% | 0.63% | Self-haul Residential & Commercial |
| Leaves & Grass | 1.24% | | 5 | Food / Paper | Composting | 97% | 80% | 0.86% | 0.28% | Self-haul Residential |
| Asphalt Roofing | 3.70% | | 6 | C & D Recovery | Market Development | 98% | 80% | 2.89% | 0.81% | Compacted Refuse Collection |
| Treated wood | 2.91% | | 6 | C & D Recovery | C & D Resale | 27% | 60% | 0.47% | 2.44% | Compacted Refuse Collection |
| Untreated wood | 0.79% | Accumulation | 6 | C & D Recovery | C & D Resale | 48% | 80% | 0.30% | 0.49% | Compacted Refuse Collection |
| Gypsum board | 0.76% | | 6 | C & D Recovery | C & D Resale | 47% | 70% | 0.25% | 0.51% | Residential |
| Composite C & D | 1.09% | | 6 | C & D Recovery | C & D Resale | 37% | 40% | 0.16% | 0.93% | Residential |
| Window glass | 0.11% | | 6 | C & D Recovery | C & D Resale | 1% | 30% | 0.00% | 0.11% | Compacted Collection |
| Small appliances | 3.70% | Accumulation | 7 | Electronics Recover | Electronics Recovery | 76% | 40% | 1.12% | 2.58% | Compacted Refuse Collection |
| Branches & stumps | 1.00% | | 95 | Program Development | | 76% | 80% | 0.61% | 0.39% | Compacted Refuse Collection |
| Ceramics | 0.17% | Accumulation | 95 | Program Development | | 23% | 80% | 0.03% | 0.14% | Compacted Refuse Collection |
| Other glass | 0.04% | | 99 | Producer Responsibility | | | 80% | 0.00% | 0.04% | All |
| Other plastics | 3.79% | Litter + health | 99 | Producer Responsibility | | | | 0.00% | 3.79% | All |
| Disposable Diapers / Fem | 2.49% | Health | 99 | Producer Responsibility | | | | 0.00% | 2.49% | All |
| Treated medical waste | 0.39% | Health | 100 | Handling | | | | 0.00% | 0.39% | All |
| **TOTAL** | **91.35%** | | | | | | | **41.20%** | **50.15%** | |

# VI. Market Incentives to Encourage Waste Reduction & Recovery

Many policies of local government directly affect the economics of disposal and the relative cost of waste prevention, reuse, composting, and recycling. These policies impact on waste generators (residents, businesses and institutions), waste haulers, reuse and recycling businesses, manufacturers and the solid waste transfer and landfill operations. Policies, laws and regulations of State and Federal agencies also impact the economics and effectiveness of recovery programs. As the bulk of the responsibility for waste reduction in California has been assigned to local government, local agencies are also one of the most important groups to provide feedback to State and Federal agencies to improve the legal and regulatory structure.
The following table shows generally how laws, regulations, and policies may impact on recovery programs:

**Table VI -1: How Laws, Regulations and Policies Affect Waste Reduction**

| Area of Impact | How impacted | Examples |
|---|---|---|
| Extraction & Processing Economics | Federal & State valuation of natural resources, enforcement of environmental laws, and energy policies all affect the cost of extraction and processing. | Federal Mining Act of 1872 undervalues Federal mineral resources. State tax depletion allowances allow for lower taxes on properties after resources have been removed. Energy subsidies hurt recycling because the energy savings from using recycled materials are made less significant. |
| Design Choice for package and product | Designers get ideas from design schools, marketing research, and regulations. Lack of EPR fails to give incentive to design more benign products and packages. Management of discarded products need to be linked to their design. | Extended producer responsibility (EPR) legislation in over 25 other countries. Natural Step programs. ISO 14000. |
| Waste Prevention (and Illegal Dumping) Economics | Quantity-based disposal fees are set at the point of disposal and through the collection system, and these also constrain the potential savings from waste reduction. | The relative cost of collection and disposal serve as incentives for solid waste prevention (composting, backyard burning) as well as illegal dumping (more expensive items tend to be dumped more frequently). |

| Area of Impact | How impacted | Examples |
|---|---|---|
| Collection Economics | Franchise collection contracts and rate structures largely dictate the cost of collection for disposal or recovery. Definitions in contracts and ordinances affect who is permitted to collect materials, and the types of services they must provide. | Local gov't often set disposal & collection rates as a combination of services, often using a portion of disposal fees for some recovery services, promotions, or other purposes. Mandatory collection policies may be a disincentive for both illegal dumping and waste reduction and recovery. |
| Disposal Economics | Long-term contracts for disposal lower incremental costs, often requiring "put-or-pay" provisions. Put-or-pay agreements require payment for a minimum amount disposal, regardless of the amount disposed, and are generally a disincentive to expanding recovery. | Public financing for permitting, developing, operating, and closing landfills and incinerators are examples of public financing tools often used for disposal. Such assistance is rarely applied to facilities focused primarily on recovery. |
| Convenience | Types and frequency of collection, size of containers, whether recycling collection is paid through other fees, and degree of source separation are generally set by local permits and franchises and contracts. | Del Norte Franchise collections include by-the-bag services, and free collection of bulky items plus a Spring Cleanup for customers. State deposit laws also have provisions to assure convenient buy-back locations for beverage containers. |
| Awareness and Recovery Economics | Waste reduction promotional expenses are often paid either through disposal rates, or through grants from unredeemed deposits. Recycling market development, economic development, transportation and financing incentives for recycling-based manufacturing businesses can each improve the economics of recovery. | Del Norte has a 10% Solid Waste Management Fee which is used to pay for all municipal waste reduction and promotion expenses. Some of these funds are used to assist recovery -based businesses. California has grants available for expanding and promoting the recovery of used oil, tires, and beverage containers. Low-interest loans are also available for recycling-based businesses within Recycling Market Development Zones. |
| Procedural & Technical, Monitoring & Reporting | Control of public health concerns has driven laws prescribing landfill and incineration technologies. Management techniques within law may be prescriptive (as the case of requiring specific landfill cover materials) or performance-based (such as demonstrating that a landfill cover acceptably inhibits impacts to water quality). Such requirements may also include requirements for operations and emergency response plans, and/or monitoring and reporting. | Federal law defines acceptable landfill and incineration practices, adding additional handling requirements for more hazardous materials. State law includes requirements relating to public health, planning, monitoring, worker safety, and reporting. Local health concerns related to food waste is the justification for awarding franchise collection monopolies: one company is granted the exclusive right to pick up in an area, but they cannot refuse service within that area. Liquidated damage provisions within local contracts may be used to assure performance. |

| Area of Impact | How impacted | Examples |
|---|---|---|
| Siting of Facilities | Recovery businesses may be restricted from locating in certain areas through land use planning and/or zoning ordinances. Assuring space availability for and access to recycling and composting containers could be part of the public review of proposed developments. | Model zoning ordinances have been developed by the State of California to encourage the expansion of recycling businesses, and to provide design guidelines for allocating space in new developments for recycling, composting, and other recovery. |
| Infrastructure Economics | Laws requiring responsibility or local planning for infrastructure have generally applied to disposal planning. Federal and State grant programs are available to defer some of the capital expenses for recovery infrastructure for specific products. Extended producer responsibility (EPR) laws may take the form of bottle-bill deposit laws or more explicit transfer of responsibility for packaging or hazardous materials. | National EPR laws exist in Germany, Japan, Canada and over 20 other countries. State law requires planning for landfill diversion as well as disposal. State laws have created funds for recovery of beverage containers, tires, and oil. Local policies provide for disposal of materials which are illegally dumped at reuse and recycling facilities which accept materials from the public. |

# A. Role of the Del Norte Solid Waste Management Authority

Through this Zero Waste Plan, the Del Norte Solid Waste Management Authority (Authority) is transforming its role from directly managing solid wastes to being a catalyst for building a regional sustainable economy based in part on businesses which add value to discarded resources. Although protection of public health and safety will remain an important responsibility for whatever wastes are still landfilled, the Authority will increasingly focus on ensuring that local resources, including discarded resources, are used efficiently and effectively, creating market incentives to reduce waste with minimal government involvement in operations of facilities. The Authority will remain responsible to make sure that there is a home for all discard materials generated in Del Norte County, and particularly all that are received at the Authority facilities. The Authority will manage the landfill property to protect the health of the public and the environment based on the Master Plan, which was developed with extensive community input.

The Authority has the duty and power to inform the public, set rates and make policies concerning resource conservation and recovery as they relate to integrated waste management in Del Norte County. The public should be educated to the value of source separation and on-site management as a means to reduce discard management costs and extend the life of the existing landfill.

To assure a smooth implementation and public acceptability of this approach, the following should be the order for responding to most waste issues: information and

technical assistance; incentives through rates, policies and programs; mandates (required separation or provision of services); bans from landfill and/or transfer station; and finally, new Authority provided services, charged in the rate base.

# B. Existing Programs

The four main existing tools which the Authority currently uses to structure the market incentives to expand and promote waste reduction and recovery are discussed in this section, as well as the provisions of these agreements which most directly impact recovery program costs and effectiveness. Each of these tools continues pre-existing programs or implements aspects of programs the Authority has committed to through the Countywide Integrated Waste Management Plan.

## The Landfill Operations Contract

- Combines landfill operations and phased closure of the Crescent City Landfill.
- Requires contractor to provide the following services as part of the landfill Operations, without separate compensation: recycling of used motor oil, ethylene glycol antifreeze, and car batteries.
- Includes provisions to share a portion of the cost savings in the case when the contractor identifies opportunities to reduce Authority expenses.
- This contract also continues the policies of providing free disposal services to County Departments as the County owns the landfill. Unfortunately, this eliminates the cost of disposal as an incentive to reduce waste and increase recovery in County Departments.

## The Franchise Collection Contract

- Combines previous separate garbage collection franchises for Crescent City and Del Norte County.
- Requires contractor to provide and service 6 multi-material recycling drop-off sites (roll-off bins with divided partitions; unloaded one material at a time); specified newspaper, aluminum cans, steel cans, glass containers to be collected and a minimum of two other materials from list of alternatives;
- Single-family curbside collection, and single-material multi-family and commercial recycling services are offered for additional charges, and those charges cannot exceed 75% of the comparable refuse rates. These services are available throughout the entire franchise area, which includes nearly the entire County.
- Residents may pre-purchase individual bags which may be placed at the curb for collection on the collection day for that neighborhood. This is essentially a pay-as-you-throw system. Similar pricing structures (i.e. equal cost for equal quantities of waste) have not been established for per-can collection fees.

- Residents who have subscribed to trash collection service for over 90 days are also eligible for a free spring yard waste collection, and free collection of up to two items of furniture, refrigerators, large appliances, or mattresses for no additional charge.
- The contract definition of solid waste specifically excludes source-separated recyclable materials from the solid waste collection monopoly granted by the Franchise Agreement. Fee-for-service collection of residential recyclables is the exclusive privilege of the franchise collector within the franchise area, though residents may donate or sell their materials to any party of their choice. Entrepreneurs may initiate commercial recycling collections without conflict with the franchise agreement.
- Additional services shall be provided by franchise hauler upon request of the Authority, subject to rate proposed by franchisee for such service. If a mutually acceptable rate for new services cannot be negotiated within a reasonable time frame, the Authority retains the right to solicit other bids for such new services.
- By mutual agreement, the Authority retains the right to redirect materials collected by the exclusive franchise hauler to a specific materials processing location.
- The Authority retains the ability to adjust level of franchise fee through life of contract, enabling the Authority to increase revenues to fund recycling programs required to meet integrated waste management goals.

## Policies Allocating Authority Revenues and Resources

- Levied a 15% surcharge on landfill tipping fees since 1992 to help fund the $1.5 million anticipated needed to build a materials recovery facility and transfer station.
- Adopted policies to support reuse and recycling businesses which have received illegally dumped materials after hours. The policy includes a process to determine what fences, lights, etc. may be deployed to deter such dumping, and the Authority's payment for the disposal of these materials.
- Proposed and administered over $1,370,000 in grants since 1994, including programs addressing drop-off containers, community/tourist recycling containers, used oil recycling, household hazardous waste collection, community cleanup, tire cleanups, this Zero Waste Plan, and development of a Resource Recovery Park.
- Spent over $1,500,000 for closure planning, approximately $3,500,000 for closure, and $88,300 annually for 30-years of post-closure maintenance. The landfill property has negative value in terms of the continuing monitoring and maintenance costs, but has over five acres of space which may be used for future solid waste management functions.

### Advocacy at the State and National level for Laws and Regulations to support and expand local programs

- The Del Norte Solid Waste Management Authority was the first local government agency to endorse the policies of Zero Waste, End Welfare for Wasting, and Jumpstart Jobs with Design and Discards. These same policies were later adopted by the oldest and largest statewide recycling organization in the nation, the California Resource Recovery Association.
- The Authority Director is on the Board of Directors of the Environmental Services Joint Powers Authority (ESJPA) for the Regional Council for Rural Counties, which includes 21 rural counties in northern California, and the ESJPA regularly lobbies on laws related to recycling and solid waste.
- The Authority Board selects specific State bills to support (or oppose) at the start of each legislative session, and staff send letters to legislators at each committee which hear these bills to make the Board's opinion known.

## C. Goals

The goals of the Authority's market incentives are as follows:

1. **Encourage Conservation Over Wasting.** As opportunities arise, the Authority should work to assure that all fee structures encourage waste prevention, reuse, composting, and recycling over disposal. Authority contracts and policies should encourage waste reduction and optimal resource use, and leave the door open to future recovery expansions or innovations by a variety of market participants. Investments by the Authority or through Authority contracts should be made in waste prevention and cyclical resource-use systems before investments are made in collection and disposal systems.
2. **Support Existing Programs.** Losing even one collector or processor can dramatically impact recovery rates. Once a recovery program is initiated, the Authority should support the continuing availability (and expansion) of convenient recovery programs for that material, even during temporary market downturns. The Authority will continue to employ both the cooperative nature of smaller rural communities and the competitive nature of the marketplace to stimulate regional waste prevention and efficient administration, reuse, recovery, recycling, composting programs. The Authority will also continue to assist private and non-profit recovery enterprises which receive materials from the public to assure that illegal dumping does not become a burdensome expense.
3. **Periodically Evaluate Target Materials and Generators.** The Authority will reassess which waste materials or generators should be targeted for expanded recovery approximately every 5 years. The Service Voids Analysis described within this Plan is one method for this evaluation, and includes consideration of the proportion of each material being wasted as well as health, litter, and recovery considerations.

4. **Create Public-Private Partnerships to Reduce and Recover Materials.** If the total projected per ton or per unit reduction and recovery costs for managing a target material is less than the legal collection, transport, and disposal costs, the Authority will contract for or implement a local program. If not, the Authority will pursue a Market Development Program for these problem wastes.
5. **Develop Markets for Problem Wastes.** The Authority will continue to advocate for public-private partnerships and legislation as necessary to encourage producers to improve the total resource efficiency of their products, and to make producers, retailers, and customers aware of demonstrated negative impacts of their products and packaging, including litter and disposal.

# D. Recommendations & Alternatives

Currently about $1.5 million is spent each year on the garbage collection franchise by Del Norte Disposal's customers. Another $1.15 million each year is spent on disposal, closure, monitoring and postclosure costs within Del Norte County. Including the estimated gross revenue of private recyclers within Del Norte County, the total amount currently spent on discard management - nearly $3 million annually - may be viewed as the budget which could be available for moving towards Zero Waste. In the transition to Zero Waste, municipal disposal costs may never go away completely as Del Norte will have to continue to pay the costs for landfill closure, and post-closure maintenance for many years to come. The challenge is figuring out incrementally how to reinvest the available cash flow into programs and practices that will provide price signals to the marketplace to continually move towards Zero Waste.

These tasks will require the Authority to be skilled in planning, contracting for services, providing information and education, economic analysis and acting as a catalyst for changes needed. Unlike a traditional garbage collection system and landfill responsibility with one or two major contracts to manage, the Authority will be working to establish a "reverse distribution system," with many contracts, agreements, and policies to provide services for specific components of the discard streams.

The contracts, agreements, and policies should build upon existing conditions wherever possible. For example, in Del Norte over 88% of the vehicles which came to the landfill in 1997 were self-haulers, and over 60% of the waste disposed by weight was from self-haulers. Therefore, Del Norte recovery programs at the landfill, future transfer station, and other facilities should take advantage of the significant potential for separation and recovery from self-haulers when recovery is as convenient as disposal and the price signals encourage recovery.

## The Landfill Operations Contract

The Authority should continue to negotiate improvements to the material recovery at the landfill site, such as establishing a separate per-ton rate for ferrous metals recycling, and placing trailers on-site to foster the recovery of matresses, box springs, appliances and furniture.

The limited remaining landfill capacity in Del Norte County should be viewed as a scarce non-renewable resource. Equipment purchases and operational changes that will extend the life of that landfill should be pursued, to decrease the transitional costs from current low disposal costs to those anticipated after the County's only landfill closes.

## The Transfer Station / Materials Recovery Facility (TS/MRF)

Rate structures at the landfill ( and new transfer station / materials recovery facility after landfill closure ) should be designed to provide incentives for keeping materials clean and separated as much as possible to facilitate the highest and best use of the materials and products. The Authority should pay the new contractor for the TS/MRF on the basis of number of tons processed through the station, not the quantity landfilled. All tons reused, recycled and composted at less than the long haul and distant landfill disposal fee should be an economic incentive for the TS/MRF operator to help achieve Zero Waste.

The avoided costs of garbage collection and disposal will become a larger concern to many businesses and self-haulers once the landfill closes and disposal costs increase. When individuals source separate their recoverable materials, they should realize these avoided cost savings. This is particularly true for larger businesses and institutions, especially if the person specifying the level of service, coordinates with the person paying for that service.

## The Collections and Disposal Franchise

If you want reduction, pay the contractor to reduce. If you want recovery, pay for recovery. We have waste because we have paid for disposal. Local government can greatly influence the potential to retain or enhance the value of discards by structuring the basis of payment to its franchise or permit collection contractors. The Authority should develop additional policies and incentives to ensure that the franchised hauler and other contractors have continuing economic incentives to expand recovery. The franchised hauler should be paid in a way that they make more money on doing the right thing (collecting recyclables), than on continuing the past practices of most material collected going to be buried in the landfill. Similarly, if haulers do not collect materials prepared according to specifications, it should cost them significantly more than doing the right thing.

Negotiate with existing garbage collection franchisee to provide collection services recommended in this Zero Waste Plan, on same payment basis as currently paid, with minor adjustments in rates to cover the amortized cost of capital improvements required by the contractor to implement the Zero Waste Plan recommendations. Whenever there is a choice of designing a system for recycling efficiency or garbage collection efficiency (e.g. on routing of trucks), choose maximizing recycling efficiencies. Also provide incentive in franchise fee structure for non-exclusive commercial waste haulers to provide reuse, recycling and composting services.

For the next garbage collection agreement, design a new system to pay the contractor more for recycling success than garbage collection success (e.g. consider basing the contractor's payments on the total tons documented reused, recycled or composted, not the number of customers served or the number of cubic yards of commercial collection service provided).

- **Pay As You Throw (PAYT)**

One of the most important tools the Authority has within the Collections Franchise is the ability to set rates. The costs for the garbage company to pick up the second can of trash at a single location are less than the costs to pick up the first can. In Del Norte like many places, the disposal cost for the volume of the second can is cheaper than the first. The current variable rate structure for residents provides little incentive to reduce waste and recycle more, due to the small increments for each larger number of cans of collection service:

If the cost per volume for each can was made to be the same, this would be called a Pay As You Throw (PAYT) system, because there would be an equal per volume charge for larger amounts of unseparated waste. The effectiveness of PAYT systems as waste prevention tools however, depends on access to free or low cost convenient recovery options, and is further improved by mandatory separation. When recovery is widely available, PAYT systems provide a direct incentive to reduce the purchase of items and packaging that are not reusable or recyclable. Poor choices result in increased disposal fees. Fee based systems have had dramatic impacts on waste prevention. In Dover, New Hampshire, residential waste reduction increased from 3% to 52% after implementing per-bag trash fees and comprehensive curbside recycling. Annual per household costs for solid waste management dropped from $122 to $73.

**Table VI - 2: Communities with PAYT Trash Fees**

| Community & System | Population | Program Began | Price Paid per month in 1997 | Residential Waste Reduction % |
|---|---|---|---|---|
| Bellevue, WA<br><br>cans | 103,700 | 1977 | $7.13 / 19-gal<br>$12.91 / 30 gal can<br>$18.10 / 2 x 30 gal<br>$4.97 / yard debris<br>$3.17 / recycling | 60% |
| Chatham, NJ<br>blue bag | 8,300 | 1992 | $75 / annual fee<br>plus $0.65 / 15 gal<br>$1.25 / 30 gal | 65% |
| Seattle, WA<br><br>cans | 534,700 | 1981 | $10.05 / 12 gal<br>$12.35 / 19 gal<br>$16.19 / 32 gal<br>$16.10 / additional can | 44% |
| Fitchburg, WI<br>can & tag | 17,300 | 1994 | $82 / annual fee for 32 gal<br>plus $1.50 per tag, and<br>$34.86 for 64 gal<br>$60.96 for 95 gal | 50% |

**Table VI - 3 : How PAYT Could Affect Rates in Del Norte**

| Cans Collected / Week | Monthly Cost per household as of 01 Dec 99 | Under a PAYT system (equal cost / volume) |
|---|---|---|
| One | $12.04 | $12.04 |
| Two | $16.94 | $24.08 |
| Three | $22.85 | $36.12 |
| Four | $28.75 | $48.16 |

## Other Contracts and Agreements

Develop memoranda of understanding (MOUs) on a voluntary basis with major institutions which are required to plan for landfill diversion and recovery (e.g. Pelican Bay Prison, Redwood National & State parks, school districts, and government

agencies) but could benefit financially in the future if they implement reuse, recycling and composting programs. Recommend that they put stipulations in the contracts of their suppliers and vendors that coordinates their programs with those provided in the surrounding communities.

## Ordinances and Policies

The authors recommended that the Authority draft and pass an Ordinance that changes the prosecution of illegal dumping as a civil offense, finding that two or more pieces of mail in illegally dumped litter is adequate evidence to impose civil penalties for illegal dumping. The Ordinance should provide the Civil Court authority to charge a fine as well as a reward. Litter fine revenues would be dedicated to the costs for enforcement staff and operating costs (e.g. Police, Health Department and Legal support) as well as cleanup costs. Rewards will enlist the full community in enforcing this system, especially involving Neighborhood Watch associations. The presumption of evidence for illegal dumping could be established as finding two addresses or otherwise incriminating evidence in one location to be sufficient.

## Financing Incentives

Financing incentives are particularly important to create a viable recovery infrastructure. Currently, landfills cannot realistically be developed without mechanisms to finance the preliminary studies, planning, permitting, start-up and post-closure maintenance costs. Similarly, financing capital expenses of recovery facilities may be triply difficult: 1) in addition to the planning, permitting and start-up expenses, recovery technologies are often expensive, 2) recovery facilities are often unrealistically expected to pay back loans and be profitable despite dramatic fluctuations in commodity prices, and 3) recovery businesses are rarely treated as essential public utilities in the way disposal facilities are. In other words, landfills are never expected to pay for themselves and are often developed, monitored and maintained using public funds and investments, whereas recovery businesses are often placed in competition with disposal without access to similar public resources.

The rationale for financing incentives must answer three questions: 1) What is the source of funds?, 2) What are the desired benefits and outcomes, and 3) Who administers and monitors the funds?

Potential sources of funds include (in order of preference) disposal fee surcharges, fines for illegal dumping, grant and loan programs, deposits or advance disposal fees, permit fees, user fees, and sales taxes. Bonds or locally-administered loan programs may be used to increase the resources available in the short term, but would ultimately be paid through one of the methods mentioned in the last sentence. The benefits of any funds made available to finance aspects of developing infrastructure for reused and recovered materials should be to reduce waste, to reduce waste-related expenses, and/or to create jobs while expanding waste reduction and

recovery. The administration and monitoring of such incentives will be determined by the nature and source of the incentives.

As part of the application process for expanding the Humboldt Recycling Market Development Zone to include Del Norte County, the Authority will evaluate potential financial incentives available to recovery businesses. Matching the incentives to the projects will be part of process of developing the facilities and recovery businesses. Potential incentives include local tax deferment or relief, loans, or business cluster development for repair, reuse, recycling, or composting businesses. There may also be opportunities for coordinating and/or expanding financial assistance to reuse and recovery businesses with programs existing in Humboldt County. The Authority will continue to apply for State and Federal grant funds to leverage these local incentives.

For the development of the Resource Recovery Park or other major public and private facilities, the Authority will consider the use of CA Pollution Control Financing Authority low-interest financing options, or issue low interest tax advantaged bonds to help construct solid waste facilities with private partners. If a site requires major renovation and new capital equipment, packaging these debt needs and taking advantage of the lower interest rates of bonds could be considered for several of these projects at the same time. The Authority need not necessarily be the only agency involved. For example, monitoring local banks' track record of Community Reinvestment Act investments can provide leverage to provide more local loans, or joining with the issuance of bonds by other governmental entities within in the region or through the Regional Council of Rural Counties.

As part of the process of applying to expand the Humboldt Recycling Market Development Zone and developing the Resource Recovery Park, the Authority will work with regional economic development agencies and the small business development center to identify funding to provide business planning, product and market development grants to existing or start-up businesses that commit to providing a market for materials recovered within the County, with preference to those locating in the Resource Recovery Park. Providing entrepreneurs the money themselves to do business planning and development is much more effective, if well structured with timelines and deliverables, rather than having consultants or government agencies supposedly do the work for them.

## New Investment Instruments

There are two new mechanisms to encourage investment in productivity and efficiency improvements that impact the government and private sector, including households, respectively. They are 'productivity banks' and 'efficiency utilities'. A 'productivity bank' provides low interest loans to government departments and agencies in order to improve productivity in operations. Increased revenues and reduced costs are indicators of increased productivity. Loans are repaid to the 'productivity bank' from

increased revenues resulting from the investment and/or budgetary savings resulting from the investment.

Philadelphia started a productivity bank six years ago and has excellent results with its loans to departments for advanced computer technology, specialty consultants and other programs. The Philadelphia 'productivity bank' was capitalized with a $20 million bond issue. Los Angeles County operates a productivity program, although it is not as formal as a 'bank'. Los Angeles County's program uses its general budget to capitalize its productivity investments.

An 'efficiency utility' serves the same purpose as the 'productivity bank' only it focuses on the private sector, businesses and households. Low interest loans are made in order to stimulate immediate investments which allow entities to increase efficiency. Often such investments have a pay back period that is longer than that expected from traditional investments.

Other potential sources of capital for a 'productivity bank' are Community Development Block Grant (CDBG) funds. Another possibility is the use of private sector capital through the Community Reinvestment Act (CRA) provisions of the federal banking law. The CRA was passed to make sure that banks make investments in the communities they serve even though these investments may not meet traditional investment standards. The CRA main focus was the elimination of the so-called practice of 'red lining' in which banks drew red lines around communities in which they refused to make household or business loans. If banks do not live up to their CRA requirements, the federal government can revoke their corporate charters. Communities participate in the process via meetings with local banking officials and letting their needs be known to the bank. The federal government reviews banks CRA performance records on an annual basis.

As part of the research and preparation for the Zero Waste Summit in Del Norte County, six local bank officials were contacted. Each had a CRA program and stated their interest in discussing how CRA dollars can be made available to businesses and individuals.

## Policies for Materials without Markets

All materials identified through the Voids Analysis as a 'Service Void' have no functional market for recovery in Del Norte. One interpretation of Zero Waste is that all materials which are landfilled, incinerated, or illegally disposed are testimonies to failure: failure to create market incentives that recognize the intrinsic value of the materials being disposed, failure to stimulate or create a viable local recovery infrastructure, failure to share the lifecycle responsibility for the disposed material with the producer, and/or failure to educate the community about the convenient ways to reduce, reuse, recycle, or compost the material.

Since household and local budgets pay for virtually all solid waste management costs in the country, there is a growing displeasure with the lack of responsibility on the part of manufacturers and distributors of products and packaging. In Europe, extended producer responsibility (EPR) programs have been introduced. Both the US Conference of Mayors and the US League of Cities have issued resolutions calling for more EPR.

Table VI - 4

**Eight Steps to Develop Markets for Problem Materials**:

1. **Target Producer Partnerships.** If local programs cannot be designed cost effectively to reuse, recycle or compost a problem material, the Authority will work with businesses which sell and manufacture these materials to either: a) completely address the concerns which are problematic about these wastes, or b) take them back from their customers. The Authority will invite producers (through trade associations, manufacturers and/or retailers) a public meeting to discuss the problems caused by these materials, and request their assistance in developing a system which will address these concerns, including the arrangement for "milk runs" to collect and process these materials from similar businesses.
2. **Help Initiate Innovation.** Identify voluntary initiatives that producers might undertake perhaps on a regional basis. Identify incentives which would enable existing or new businesses to provide the desired services;(including possibly negotiating with suppliers for packaging take-back programs for transport packaging);
3. **Expand and Diversify Existing Recovery Systems**
4. **If Partnerships Fail, Extend Producer Responsibility (EPR).** If public-private partnerships fail to create a recovery system within five years, a Recovery Ordinance, to be developed through a public process, will establish a deposit, fee, fine, or mandatory program for the proper recovery and/or disposal of targeted materials that is levied at the point of purchase as is currently done statewide for beverage containers, used oil and tires. Such programs would only be implemented on products which cannot be reduced or recovered and for which the producers response fails to adequately address their shared responsibility for reducing the concerns associated with sales of their products.
5. **Start Recovery.** The Recovery Ordnance would also require those who sell materials or products subject to the Recovery Ordinance to cover the capital costs for local recovery infrastructure expansion associated with these materials, or to establish a take-back system for those products and/or materials on their property or within the same shopping area;
6. **Assure that recovery is cheaper than wasting.** Review rate ordinances to provide incentives for waste reduction at all levels of service.
7. **Assure that recovery mechanism has capacity to process all recoverable discards.**
8. **Ban recoverable discards from disposal.** For materials which pose extraordinary hazards or which are readily separated for recovery, and for which the recovery system will have adequate capacity, disposal bans are one of the most effective ways to assure achievement of zero waste.

## Bans and Boycotts

Bans and boycotts have three distinct roles in Zero Waste policies: to communicate more effectively regarding products and materials, to reject products or materials which are harmful, or to commit market forces to recovery.

Boycotts are coordinated temporary individual actions to reduce or eliminate use or availability of a product or material in a particular situation, to stimulate action by retailers or producer. Boycotts supported by local elected bodies can be particularly effective. For example, an organized boycott targeting a McDonald's Restaurant in New Haven eventually led to the discontinuance of using polystyrene packaging by that fast food chain. Currently, the GrassRoots Recycling Network is coordinating actions to encourage Coke an other soft drink bottlers to use recycled plastic bottles, and the Authority has passed a resolution encouraging the same (see Appendix D).

Bans, which are permanent exclusions of products or materials from specific locations, have two potential functions. The first is an exclusion for worker safety, handling considerations, or environmental concerns - such as the ban on liquid or hazardous materials, or untreated or improperly contained medical waste from landfill. The ban on lead in paint and gasoline has been attributed with greatly reducing the amount of lead in the atmosphere. The US ban on DDT reduced the impact of this poison in our country as well. Many such bans are already in place. Experience with the polystyrene ban in West Hollywood indicates that knowledge and public advocacy of acceptable alternatives are a prerequisite to such product bans.

The third potential function of a ban has been called 'landfill prohibition,' or 'mandatory recycling.' For example, after establishing a yard debris composting facility which is publicly available and reliable, banning such materials from landfill disposal reduces reliance on disposal while directing recoverable materials to appropriate facilities, keeping both material and the related jobs in the local economy. Mandatory recycling often also includes 'mandatory source separation:' bans from including these materials in the disposal collection system, just as liquid and hazardous materials are currently banned. Such bans are particularly helpful when the recovery facility relies on user fees to cover their processing, transport and marketing expenses.

During the transition to a Zero Waste economy, it may cost more initially for everyone to figure out how best to respond to such policies and payments, but any incremental costs should be able to be avoided once they avail themselves of new reuse, recycling and composting services in the Zero Waste economy of the future. In evaluating long-term economic costs and benefits of waste diversion programs, landfills should be valued at the marginal costs of developing and using a new landfill site, including transfer and transportation costs, long-term liability and environmental impairment costs.

As a result, every five years until Zero Waste is close to being achieved, the Authority should provide a progress report and 10 year projection of program activities and waste reduction targets to the community, and convene a regional Summit to identify new opportunities for collective action to achieve Zero Waste goals.

# VII. Waste Prevention, On-Site Management & Advocacy

## A. What is Waste Prevention?

Waste prevention, also referred to as waste elimination and source reduction, means not producing waste in the first place. This differs from waste reduction, which also includes reductions in disposal through reuse, recycling and composting, which means the processing of discards for use in industry and agriculture. From a municipal perspective, the tell-tale mark of a waste prevention activity is a material management mechanism which reduces disposal and illegal dumping and which requires no collection system. Investments in waste prevention are generally very cost-effective in the long-run because they permanently reduce or eliminate the need for collection and processing. Waste prevention behaviors must be learned and reinforced, which means that an aggressive public outreach and training program is essential to the success of any waste prevention program. When combined with rates which provide an ongoing incentive for each customer to reduce their disposal, waste prevention training can be a cost effective way to reduce both customer and municipal collection and disposal expenses.

### On-Site Waste Prevention and Materials Management Training

The evolution of managing solid wastes is similar to the evolution of hazardous waste management. As awareness increased regarding the risks of hazardous materials, regulation also increased. Soon it became clear that the larger the toxicity and quantity of hazardous wastes, the greater the cause for concern. The most effective way to alleviate this concern was to first look for ways to reduce the quantity and/or toxicity of materials used, then to look at how those materials are stored and managed as discards. By preparing written materials and training groups of similar businesses which regularly use hazardous materials, government agencies began promoting management practices which reduce the number of processes which result in hazardous waste. These actions reduced the amount of hazardous wastes generated, and reduced the costs to businesses for hazardous waste disposal as well as monitoring and reporting.

Discarding is a behavior, as are purchasing, storing and using materials. To effectively influence these behaviors most effectively, the Authority must:

1. Understand each process well enough to advocate (or preferably demonstrate) specific improvements to materials management including waste prevention, materials separation and storage, and methods to increase recovery.

2. Communicate the benefits and convenience of the desired behavior(s) to the target audience, and compare the new behaviors to current practices.
3. Communicate the costs, illegality or detrimental impacts of not adopting the behaviors.
4. Work to assure that the benefits of waste reduction accrue to or at least are understood by the design, operations, and/or maintenance staff.

Because of the emphasis on behavioral change, waste prevention training targets specific classes of generators, such as single-family households, apartments and mobile home parks, businesses and institutions. Commercial and institutional waste prevention education generally target sectors of similar businesses. For example, dentists, veterinarians and doctor's offices each use and discard similar materials (paper, medicines and medical supplies, biological wastes, x-ray process wastes, etc.) and could each benefit from a single training, possibly coordinating a group collection of photographic and/or medical wastes.

Public waste prevention outreach should be developed in consideration with how and when discard behaviors are learned. For example, about the time children learn to clean their room (ages 5-8), they also learn about recycling and garbage - this is also the best time to encourage and establish the habits of reuse and backyard composting. Similarly, oil recycling education is best targeted to ages 15-17, as this is the period when people learn how to maintain their vehicles.

The Authority's partnerships with the College of the Redwoods, CalWorks, and other community worker training programs can set up a referral and training systems for new employees. The Authority could also facilitate a temporary employee referral system at the Resource Recovery Park (see Section XII.B) to pool the needs of the different businesses in the Resource Recovery Park and ensure that companies in the Park will have a good quality, well trained workforce.

## On-site Residential Waste Reduction

The following are some of the techniques for on-site residential waste prevention and waste reduction:

- Perhaps the most fundamental incentive to promote on-site waste reduction is a variable can rate or pay–as-you-throw system (see section VI.D), coupled with convenient, low-cost recovery options.
- Composting and/or vermicomposting of food discards, grass clippings, and yard debris is an ideal waste prevention activity that produces mulch, compost or soil amendments for on-site use. "Grasscycling", or 'mulch mowing' programs are also waste prevention programs targeting grass clippings. In Del Norte, the Authority and AmeriCorps currently sponsor free monthly workshops to promote composting and grasscycling, and sell composting bins at cost.

- Precycling refers to choosing to reduce waste as we shop: Choosing products with the lowest lifecycle impacts for the product and its packaging, choosing reusable, rechargeable, repairable and refillable, bringing your own containers and shopping bags, and buying in bulk. This entails the use of available information and education materials about products, and in some cases, scrutiny of labels, to reduce unnecessary materials from entering the household.
- Reuse can include using materials in their original function. Original function reuse includes 'hand me downs' of clothing, appliances, furniture, automobiles, and most recently computers. Mechanisms include garage sales, want ads, thrift & consignment stores, and salvage facilities at disposal sites.
- Old items may also be used in a new function. New function reuse activities include the use of old tires for play swings, the use of scrap paper to make note pads, use of plastic containers to store left over foods, the use of old lumber to make sand boxes. Several depots for creative reuse have been established throughout California area and function as school art supply houses.
- Swap programs can also involve excess food. Planning for social events can include contingency arrangements to deliver left over food to shelters and food banks that serve homeless families and individuals.
- Advanced disposal fees (ADF's) have been used to alert customers to the true cost of a product from cradle to grave. These fees internalize the cost of a product into the purchase price, thereby giving the customer a truer cost of their purchase. These fees have been applied to beverage containers, tires, used oil and batteries and the proceeds pay for recycling and safe disposal programs.

## Business and Institutional Waste Prevention

Commercial and Institutional wastes comprised about 62% of the tonnage disposed in Del Norte in 1997. Also, wastes from these generators tend to be process wastes, incidental to performance of a specific activity. Process wastes tend to be less commingled, and can often be reduced or more effectively separated for recovery by following the suggestions from a waste audit. For these reasons, the speed with which a community moves towards Zero Waste is closely tied to the public policies regarding the private sector waste stream.

Many businesses have invested in waste prevention, but government actions often have been responsible for prompting businesses to discover waste reduction opportunities. In a large city like Los Angeles, the educational materials and hands on workshops conducted for numerous industries (including construction and demolition, hospitality) by the Office of Integrated Solid Waste Management may have saved the private sector as much as $300 million. Public involvement in waste prevention in the private sector is logical and legitimate. In Del Norte County, there is an important precedent for public discussion and planning with the private sector. EcoNutrients, a subsidiary of Hambro Forest Products, Inc. evolved from discussions among county, city and private officials. The Hambro company itself employs over 100 workers and is

a model 'zero waste' enterprise which uses waste wood chips to make a densified wall board product. The EcoNutrients company pioneered the use of fish industry wastes to develop a successful line of products from these materials.

Similar meetings, called 'sector huddles' have been used to develop other public-private partnerships for developing local markets for material discards. The Zero Waste Summit (see section VIII.A) included sector huddles for Construction and Demolition materials, Traditional Recyclables, Organics, Metals, and Reuse and Salvage.

Examples of on site commercial and business waste prevention include:

- Innovative activities at restaurants and cafeterias include the use of napkin condiment dispensers instead of single use packages, education programs to reduce food wastage, on site composting and vermicomposting of food discards, use of reusable mugs instead of disposable cups ('lug a mug') programs which have reduced plastic cups by 30%, and switching to washable dishes and glassware (glass and polycarbonate) from disposables (paper and polystyrene) which reduced waste by 25 tons per year at one college cafeteria. In 1999, Authority staff made presentations on waste reduction opportunities for restaurants at seminars organized by the Health Department regarding food handling practices.
- 'Green Workplace' or 'Maximum Green' office building programs have prevented dramatic amounts of waste within government offices in Ontario, Canada. By implementing the program in 42 buildings serving 22,000 workers, a cumulative savings of $1 million in disposal costs and reduced waste from 75% - 90% by weight. Key to the program is a desk-top mini-can for garbage discards and easily available drop off sites for recyclables. Coordination with the janitorial crew is also critical for success. Green workplace programs also involve the scrutiny of purchasing practices, much like precycling programs assist household decision making. These are also called 'smart buying' programs. Purchasing agents negotiate with suppliers to make sure that corrugated packaging is taken back, as are plastic beverage trays. Product review committees have been formed by companies to focus on these negotiations with suppliers.
- 'Waste exchanges' are an important approach to waste prevention for industrial facilities. These programs are information systems (using web sites, newsletters and fact sheets) that list available commodities and packages and provide contact information for those who can use these items. Numerous states, regional organizations and private groups operate waste exchanges, including CalMax (www.ciwmb.ca.gov/CalMAX) and 'mini-maxes' developed by several California counties.

## Waste Audits

To assure that waste audit services are available to interested businesses and institutions, trained individuals must be available to conduct the audits. These audits also provide education, suggestions for source reduction, and designs of the most efficient recycling collection programs targeted to traditional or new market opportunities. Ideally, audits of similar businesses would form the basis for general waste reduction suggestions which could then be shared with similar interested businesses.

- Company wide waste audits have been used by many industrial firms to provide analysis of waste prevention opportunities. Some firms in more metropolitan areas offer their auditing services for free but retain up to 50% of the savings from waste prevention recommendations they make. Waste audits have been particularly successful in reducing the generation of hazardous waste from manufacturing facilities. These are referred to as 'pollution prevention' programs, some of which return dramatic savings to their sponsoring companies. By substituting cleaning solvents made from organic materials as opposed to those made from petrochemical materials companies can avoid costly disposal costs and liabilities.
- For waste audits to be accessible to Del Norte businesses and institutions, the Authority must establish a mechanism to assure that trained individuals are available to perform and promote the audits. Waste Auditors may be trained and certified in much the same way the Authority currently certifies Master Composters - after training by Authority staff, auditors become certified by passing a standard test. An alternative would be to create a waste audit training program through College of the Redwoods. Such trained students could do the follow-up visits after an expert did the waste audit to maintain on-going contact and assistance.
- Other ways the Authority may assure the availability of waste auditors would be to develop a regional position, to pay for waste auditors through the business's avoided garbage costs, regional government wage sharing, grant generation, or a combination of some or all of these.
- A more limited waste audit tool would be to have the existing master composters assist non-residential sites in developing on-site vermicomposting and composting programs. There would be a scheduled follow up and problem solving with these non-residential establishments. While composting is an important element of waste reduction, a full waste audit would also include suggestions for improving waste prevention, reuse, and recycling, and evaluation to determine if disposal service may be reduced.

# Promotion of On-Site Management

On-site management is the handling, storage and processing of material discards before collection. Improvements in on-site management can potentially reduce pollution, improve worker and public safety, reduce waste and improve recovery - and no new facility is required. Training in on-site management requires education of property owners, architects, demolition/deconstruction and general contractors and their sub-contractors, government planners, elected officials and environmental regulatory and building officials. A good example of on-site management would be the composting of food discards at groceries and large restaurants in on-site composting containers.

## • Deconstruction

Deconstruction is defined as the on-site management act of dismantling buildings or structures is such a way as to maximize the reuse of building materials, separate the remaining materials for recycling, and minimize or eliminate the amount of materials to be landfilled. After deconstruction, businesses or property owners need to market the reusables and recyclables recovered from the building, and this can be done through on-site sales, incorporation into new designs, or sales through a used building materials warehouse.

## • Out From the Old and Into the New

The best utilization of used building materials is to design the new building to incorporate the materials from the old building. To accomplish this the new building owners and architects should inspect the existing building(s) with a deconstruction appraiser or inventory specialist who can point out the architectural components that have the greatest potential of recovery or is economically feasible to recover from the building. The architect can then design the new building to incorporate those materials and specify them in the new construction bid.

The National Park Service has used this concept for quite a few years in their demolition contracts. These contracts require the deconstruction contractor (formerly known as a demolition contractor) to save specific architectural components which the Park Service will use for the restoration of historical buildings within the park. For example, the Presidio of San Francisco demolition contract required the recovery for reuse of roof tiles, gingerbread, banisters and other architectural components from the demolition of parts of Letterman Hospital. These architectural components were then warehoused to be used in future restoration of other buildings in the new Presidio of San Francisco National Park.

- **Advance Sales**

This approach is to arrange or contract with end-markets prior to deconstruction for certain materials, and so no new facility is required. Advance sales can help the deconstruction contractor cover expenses and help them decide if they can make a profit on a marginal building. A marginal building might be a building with no timbers (6"x 6" or 2"x10" or greater types of lumber) or other unique architectural features (e.g. 1960s single family homes built mainly of 2"x 4"s and cheap windows, no mantelpieces or other unique features). The resale value of the building components may not cover the cost of labor to deconstruct and transport the materials to the yard or used building material store. With advance sales, the deconstruction contractor at least knows they can recoup certain costs and deconstruct only those parts of the building that will give them a profit. This approach can also potentially promote salvage of high-value materials while still retaining the potential for using the structure for fire department training, which is frequently selected as a cost-effective demolition technique. The Waste Prevention Purchasing Policy when adopted should also assist in facilitating the types of contracts suggested in this section.

- **On-Site Sales**

On-site sales are materials sales at the site of deconstruction. The Authority could assist by working with City and County agencies to assure that such activities are permissible on public and private land. The Authority could provide free advertising of sales if given sufficient advance warning to place advertisements in the local newspaper. There are two main types of On-site Sales:

**Deconstruction Auction** In a deconstruction auction, the building owner or deconstruction contractor inventories the building and marks/tags the various parts of the building with an asking price or bid sheet with a minimum bid price. The asking /minimum bid price is based on the bidder providing their own labor to deconstruct that particular architectural component. (Outdoor plants, furniture, fixtures and other items left in the building can also be part of the deconstruction activity.) For customers that do not want to do their own work, the deconstruction contractor will provide this service for an additional charge based on a posted hourly rate.

**On-Site Sales** In this case the deconstruction contractor has already deconstructed parts or all of the building and customers purchase materials and transport them directly from the site. This saves the deconstruction contractor from transporting materials to their yard, from banding and otherwise preparing the materials for transport and storage costs at the yard or used building materials restore.

Problems involved in "On-Site Sales" include whether public sales can be conducted at that particular location and liability issues from having the public enter a job site. Deconstruction activities that occur on federal or state land may be precluded

from selling due to regulations. The Authority may want to research this potential problem and negotiate arrangements with the appropriate agencies to allow for the sale (and the collection of sales tax) on those properties. Appropriate signage and site preparation can help reduce the risk of customers injuring themselves at the jobsite. For example, materials that will be marketed on-site can be moved a significant distance from the actual site of deconstruction and separated by fencing to prevent injury. Careful attention should be made to keep the jobsite free of obstacles especially nails and other sharp objects.

# B. Advocacy

## Public Education & Information

The Authority currently employs a wide variety of tools in public education and information, in order of usage:

1. Brochure: Waste Reduction & Recycling in Del Norte County 2000 (1999)
2. Brochure: Del Norte's Guide to Reuse, Repair, Rental and Restoration Services (1997)
3. Web page (1999): http://www.northcoast.com/~recycle
4. Newspaper PSAs and advertisements
5. Radio PSAs and advertisements
6. Other brochures and printed materials
7. Workshops, training seminars, and sector huddles
8. Master Composters, Waste Auditors, and other trained outreach
9. Speakers bureau presentations as requested
10. Giveaway promotional items (primarily for used oil recycling)
11. Television advertisements

Items 1-3 provide a comprehensive descriptions of the waste reduction opportunities available in Del Norte, and items 4-11 usually target specific events, audiences, or activities. In addition, recovery and disposal facilities have educational signage.

While the Authority will certainly revise these educational items as programs are modified and expanded, due to the relatively small size of the community, these will remain the primary tools for community education. As waste reduction has a variety of benefits, the Authority will also look for new educational partnerships. For example, credit counseling services, churches and the media may be partners in promoting ways of waste reduction, living more simply, making do or doing without products. Some stores may be partners in providing "shelf-talkers" and other point-of-purchase education.

## Recognition & Promotions

The Authority should expand upon the current Green Ribbon Awards and create Zero Waste Awards to recognize individuals, institutions and businesses which are shining examples for others to follow in working towards Zero Waste. The Authority should also work with local businesses to nominate themselves for the California Waste Reduction Awards Program (WRAP) and the US EPA WasteWise Program. In addition to these Awards programs, recognition of achievements throughout the year should be pursued with the local electronic and print media. Media and local elected officials should be invited regularly to tours of innovative programs, held in conjunction with business meetings of the Authority, the Chamber of Commerce and other local associations and business groups. A Zero Waste Lottery should also be instituted that would provide a cash prize for randomly selected residents, institutions and businesses who can document something new that they have done to achieve Zero Waste.

## Advocacy to Producers & Generators

The waste audits, sector huddles, on-site management promotions, and policy for materials without markets discussed in earlier chapters will each target waste generators and producers.

## Advocacy to Local Governments within the Region

The Authority is currently coordinating the Rural Cooperative Recycling Infrastructure Development Project with Humboldt County and the 20 other counties of the Environmental Services Joint Powers Authority (ESJPA) of the Regional Council of Rural Counties. This two-year project will enable the advocacy for coordinated regional waste reduction and recovery programs. After this project is completed, the Authority's continuing affiliation with the ESJPA will facilitate future advocacy for programs to be coordinated with other local governments.

## Advocacy for Legislation

The Authority's subscriptions to trade journals and memberships with Californians Against Waste, the California Resource Recovery Association, and the National Recycling Coalition provide staff with adequate analysis to enable the Authority to identify specific legislation to support. Once a bill is supported by Board action, staff submit letters of support to each committee hearing that bill. This has proven to be an cost- and time-effective mechanism to provide tangible local government support for bills supporting waste prevention and recovery.

## Additional Research

The Authority will work through the Rural Cooperative Recycling Infrastructure Development Project to identify areas for further research. By identifying general areas for research and communicating these to the College of the Redwoods, Humboldt State University and the Collegiate Recycling Council of the California Resource Recovery Association dramatically increases the chances that such research will be completed. Such research activities may also be incorporated into future grant applications. The Authority may further increase the availability of students from Humboldt State University to complete waste and environmental audits by setting aside funds to cover these students' travel expenses.

# VIII. Regional Recovery and Market Development

## A. Border Coast Regional Recycling Marketing Summit

A one-day, intensive forum was planned for approximately 50 participants from Del Norte, Curry, and Humboldt Counties to meet with the DNSWMA and its team of Zero Waste consultants. Held on Friday, July 31, 1998, the "Border Coast Regional Recyclables Marketing Summit" was conducted with an agenda and format designed for optimum participation: a condensed process of brainstorming - problem-solving - strategic planning - and consensus-building.

### Goals and Objectives

The Summit was a critical component of the process for developing the Del Norte Zero Waste Plan. The overall objectives for the Summit were three-fold:

(1) For the DNSWMA to learn from Del Norte community and business leaders their ideas for the practical details, business connections, and local resources needed to make the Zero Waste Plan operational;

(2) To inform Del Norte community and business leaders about Zero Waste and its strategies for addressing the County's solid waste problems; and

(3) To bring together Del Norte County, Curry County, Oregon, and Humboldt County business and community leaders to explore the potential for regional approaches to Zero Waste.

### Methodology

Two weeks before the Summit, invitations were mailed to more than 100 business and community leaders from the region . Those who responded, received a faxed confirmation (or phone call) with an agenda and list of Guiding Questions that would provide the focus for the Summit.

### Agenda

A total of 65 people participated in the Summit. The agenda and schedule were closely followed to provide opportunities for information exchange in the large group context and more detailed idea generation and problem-solving within the small groups. Each of the five working groups were organized with a technical resource

person and a facilitator (Four of whom had previous training in facilitating small group process) and four of the groups had a trained recorder to assist the facilitator. Each of the group facilitators were prepared in advance with a list of guiding questions and instructions to solicit everyone's ideas and to focus their group's discussion toward articulating all the barriers , resources , and the necessary actions and commitments to successfully implement Zero Waste systems in Del Norte County.

The Summit Meeting closed with an explanation to all participants that beyond a written Action Plan, local follow-up working groups will work with the DNSWMA to implement the projects and business concepts developed during the Summit.

*Agenda for the Border Coast Regional Recycling Market Development Summit*

8:00AM Sign in; receive information
8:30 Welcome & Presentations from DNSWMA
9:15 Business Presentations: "Lessons Learned"
- Irv Elliott, Eco-Nutrients
- Maggie Gainer, Fire & Light
- Dan Knapp, Urban Ore

10:00 Zero Waste: Neil Seldman, Institute for Local Self-Reliance
10:05 Break and join working groups
10:15 5 Working Groups convene:
- Organics
- Salvage and Reuse Incubator
- Construction & Deconstruction
- Scrap Metals
- Paper, Beverage and Food Containers

11:45 Lunch Break and Plenary Discussion with Zero Waste Specialists
1:00 Return to 5 Working Groups
2:30 Participants Vote on Business/Project Ideas from Each Group
3:00 DNSWMA Explain Next Steps; Adjourn Summit

## Resulting Opportunities for Local Businesses, Non-profits, and Residents

- This process of a formal, facilitated discussion between the technical consulting team and the local community and business people was successful. It clarified specific projects, their significance for Zero Waste, problems to overcome, resources available and needed, and local businesses with the entrepreneurial capability to make these projects happen by starting new ventures, or expanding and diversifying their existing businesses.
- The notes from the five working groups were typed and provided to the Authority for their future reference (included in Appendix C).
- Cross pollination of regional economic development and business goals with the goals of Zero Waste was assisted by the Summit. Over time, this will result in a greater understanding of the contributing role of waste prevention, materials recovery, reuse, and recycling in the region's economy.
- A current Contact List database of names, agencies, businesses and their contact information, including fax numbers and e-mail addresses has been developed .

- Individuals and businesses who were not at the Summit which are needed to implement the identified Zero Waste projects were identified to be contacted.

The Summit was an opportunity for introductions and first-time meetings between local entrepreneurs and representatives of community-based nonprofit organizations from across the three-county coastal region. These potential future partnerships and business alliances can play an instrumental role in the success of Zero Waste in Del Norte County. Business cards were exchanged for future contact.

The Summit Meeting served as a "kick-off" for cultivating a long-term social, economic, and even cultural context for the ongoing goals of Zero Waste. For the local people in attendance, the Summit defined the terms and established the identity for a new industry cluster in Del Norte. This has provided the basis for weaving a network of inter-related small business operations.

Finally, representatives of local agencies that can help Zero Waste businesses with start-up or expansion financing and the North Coast Small Business Development Center (SBDC) actively participated in the Summit to understand the needs and potential of these types of businesses.

## Follow-up

Immediately following the Summit, the DNSWMA staff and consulting team reviewed the written verbatim notes and summary sheets to make sure that the ideas from each group were not lost, and to discuss how these ideas could be integrated - strategically and financially - into the Zero Waste Plan, in the short-term, medium-term, and long-term.

After this intensive meeting, a great deal of follow-up information-gathering is required to continue to move projects forward. It was agreed at the end of the Summit that Project Working Groups will meet again to accomplish that. The key players were identified and will be contacted by the Authority.

Key players who were unable to attend the Summit Meeting will be sent an executive summary of the Zero Waste Plan to solicit their future participation. A videotape was also prepared, highlighting the main presentations and innovative reuse, recycling, and composting programs in the area.

## Summit Evaluation

- The number of participants at the Summit met expectations. However, because the Summit was scheduled in the middle of the summer and on a work-week day, there were several key people who expressed great interest in participating who were on vacation or could not leave their work.
- The working groups' discussions did not include as much regional thinking and planning as had been hoped for the "Summit" format.

- Evaluation forms were distributed to participants at each of the five working groups. Only seven written evaluations were received at the end of the Summit. Of the seven, participants' average "rating" of the overall quality of the Summit was "very good" from choices of excellent, very good, good, fair, and poor. A strong qualitative participants' evaluation was that there was very little attrition of numbers for the second half of the day after the Summit lunch.
- For more in-depth discussion leading to the much more specific detail needed for the implementation steps of a strategic plan and the initial discussions leading to critical agreements between future partners, a smaller number of participants (i.e. key stakeholders) is recommended for future meetings.
- Depending on the combination of group participants, each of the five working groups worked at different paces and produced information for the Zero Waste Plan in varying degrees of detail. The groups that included the key players, or identified "stakeholders" of the successful implementation of a Zero Waste business strategy were able to develop a more focused and detailed plan.

The small group focused on "Construction & Deconstruction" was able to produce the most detailed notes for strategic planning and had the benefit of having the key players for implementing this strategy at the table. The "Organics" group very quickly narrowed its discussion of the range of possibilities to Hambro Products/Eco-Nutrients and focused on a strategy for this business to recover food waste and sludge. The "Paper, Beverage and Food Containers" group focused on the recovery, processing, and marketing of beverage containers and paper, discussed the formation of an "Innovators Forum" for the creation of local end-uses for these materials, and the necessity to seek the economy-of-scale benefits in region-wide cooperation with collectors in Humboldt and Curry Counties. The "Scrap Metals" group produced a preliminary plan for systems that will increase the recovery of several metal grades ranging from tin cans to car bodies and white goods. The "Salvage & Reusables Incubator" group discussed the wide range of salvageable goods to target but could not produce the level of detail needed for strategic planning because it lacked the business leader to initiate the incubator.

## Integration to OEDP and other Local Community Plans

County and City General Plans (especially Land Use Elements), Overall Economic Development Plans (OEDP) and Zoning Ordinances should be updated to allow for reuse, recycling and composting businesses as a desirable use in urbanized areas and to allow for a reasonable distribution of these facilities throughout the County to ensure the opportunity to recycle is provided conveniently to all residents. The definition of commercial and industrial zones should be broad enough to allow different types of reuse, recycling and composting facilities without a Conditional Use Permit. The following types of facilities should be supported in the General Plan for

development and/or expansion in different areas of the County in designated areas (perhaps with a Recycling Overlay to the Land Use Map of the County), without requiring Conditional or Special Use Permits:

- Transfer Station/Materials Recovery Facility
- Household Hazardous Waste Facility
- Salvage and Resale Facilities
- Dropoff and Buyback Recycling Centers
- Neighborhood Recycling or Composting Dropoff Sites
- Construction & Demolition Material Recovery & Resale Facility
- Composting Facilities
- Office Paper Collection and Confidential Paper Recycling Services
- Textiles Recovery
- Auto Dismantling
- Scrap metals Consolidation
- Backyard Composting Demonstration Sites
- Baling or Grinding Facilities
- Recycling-based Processors and Manufacturers
- Thrift Stores
- Repair Shops
- Businesses Which Foster Waste Prevention and Reuse
- Oil Recycling & Consolidation Facility

The co-location of reuse, recycling and composting businesses should be encouraged in a countywide "Resource Recovery Park" (see section XII.B) or equivalent land use arrangement to foster innovation and expansion of these businesses. Multi-use zoning should be allowed for such a facility, with retail and manufacturing operations being combined. Existing businesses in the vicinity of the proposed Resource Recovery Park should be assisted as well (e.g. food bank and lumber mill at Standard Veneer).

Incentives could include permit assistance, infrastructure investments, grants, loans, reduced rent/lease for initial period (to allow for ramp up), use of equipment obtained for the Resource Recovery Park tenants (e.g. fork lifts, balers), low-cost disability and workers compensation insurance, access to a low-cost temporary labor pool and access to waste stream under control of the Authority.

In the construction of new buildings in the County, environmental review documents should identify the amount of wastes anticipated from the project, and a Zero Waste plan from the applicants on how they will assure that no new wastes will be added to the landfill.

In the design of all new buildings and the retrofit/rehabilitation of all major existing buildings, adequate space should be provided for reuse, recycling and composting collection containers adequate to handle the entire amount of discards from the proposed facility. All cities within the County should adopt ordinances implementing the model Recycling Facility Siting Ordinance drafted by the CA Integrated Waste Management Board. The County General Plan such include provisions to require adequate space for recycling receptacles in all Single-Family Residential, Commercial, non- Agricultural, Industrial, High Density Residential, and Rural Mobilehome Park zones.

Once adopted, plans submitted for Plan Review to County agencies should be sent to the Authority for their review and comments to ensure compliance with this new rule.

## Investigate the Potential for Inter-Industry Linkage with Already-Existing Del Norte Businesses

Clearly, the most effective strategy for economic development within the region has been business retention and expansion. There are a number of methods to weave together the goals of local recycling market development and the region's business retention and expansion goals, including:

a) Conversion: re-tooling , retrofitting, renovating plant machinery & equipment and old facilities to convert from 100% virgin feedstock to use at least a percentage of recycled feedstock

b) Expansion: increase the capacity of Del Norte's small-scale recycling-based manufacturers and artists

The lack of a consistent, available, clean feedstock supply is cited as one of the biggest single problems for all manufacturers who use recycled materials. The role of inter-industry linkages has been recognized as critical to the survival of young businesses. A new recycling-based manufacturing enterprise that is part of an existing industry cluster in the region, has a much greater chance of survival and growth than a company that is operating alone, isolated, with no real connections to other local businesses. "Success breeds success," is one of the foundations of the industry cluster-based economic development approach led by the Department of Trade and Commerce to pull California out of its economic slump of the early 1990's. In an age of flexible manufacturing networks and global marketing, survival for most small and rural businesses depends on their collaborative advantage (i.e., their ability to form regional alliances, symbiotic relationships, small business networks and strategic partnerships with other businesses).

## Target "Growing and Emerging" Sectors

Finally, the region's industry clusters that have been identified as "growing and emerging" are the seedbeds for inter-industry linkages with recycling. They are more contemporary, flexible, and open-minded to the possibility of adapting to use recycled feedstock than industry clusters that are "declining." They are generally, more willing to invest in new equipment, employee training, and new systems as they plan for expansion. They are often the region's trendsetters. Del Norte County's growing and emerging industry clusters are:

- prison-related services,
- special-niche agriculture,
- horticulture,
- food processing,
- high-tech/multi-media/software development,
- fine woodworking and other arts and crafts production,
- aquaculture,
- health care,
- environmental technologies, and
- visitor/film industry attraction

These are the types of businesses that should be explored for filling needs for goods, supplies, and services.

### Diversification

Local businesses that are growing are constantly looking for new markets and related market niches in which to expand. Some companies may add on a new product line that is made with recycled material, while still maintaining their core business. For example, a local company that manufactures picnic tables made of wood may be a likely candidate for manufacturing picnic tables made of plastic lumber.

## B. Integrating Zero Waste into the Regional Economy

### If you collect it locally, use it locally

It is very difficult to financially sustain recycling collection operations in a rural region because of the high cost to collect from widely-dispersed populations and the even higher costs to transport these low-value materials long distances to market. Therefore, a critical goal of the marketing strategy and the overall system design must be to develop local end-use markets for the locally-collected materials, as these local markets for recovered materials will ensure the long-term viability of collection systems.

The Authority should play a strong, ongoing facilitative role to local companies that are reuse, salvage, organic material or recycling collectors. While it may be difficult for a small local enterprise to establish all the necessary agreements and arrangements for cooperative collection, processing, marketing, or long haul shipping, the Authority's relationships with neighboring jurisdictions, tribal governments and multi-county agencies such as the Environmental Services Joint Powers Authority (ESJPA) of the Regional Council of Rural Counties can be very helpful to local businesses.

Building upon the concepts in this ZWP, in 1999, the California Integrated Waste Management Board awarded a model contract to the Del Norte Solid Waste Management Authority, in partnership with the Humboldt County Waste Management Authority, the ESJPA , and the Center for Environmental Economic Development in a Rural Cooperative Recycling Infrastructure Development Project to research and develop regional and cooperative programs to expand and improve resource recovery in the Del Norte-Humboldt region, as well as the 20 other northern California counties which are ESJPA members.

In many communities, the unrealistic requirements of special loan and grant programs and the high expectations of enthusiastic supporters have placed the burden of even higher expectations and more difficult conditions on recycling based manufacturing enterprises than for startup enterprises manufacturing with virgin material. While the first priority for all start-up enterprises is sheer survival, the benchmarks often set for recycling-based manufacturers are in terms of feedstock tonnage and number of employees. The Authority should carefully assess the requirements of grant funds and loans that may place restrictions or unrealistic performance requirements on fledgling Zero Waste businesses.

Table VIII-1:Comprehensive 5-Point Model for Recycling Market Development ©

**1. Working with Existing Recycling Markets**

(a) Negotiate better arrangements with recycling industry brokers and buyers to improve existing marketing arrangements.

(b) Develop regional cooperative marketing arrangements among local governments and/or private recycling collectors.

**2. Recycling Industry Attraction**

Attracting recycling industries to site a new mill or to local a division of their operations within the region.

**3. Local Industry Retention & Expansion Through Inter-Industry Linkages with Recycling**

Develop inter-industry linkages between recycling and the region's existing manufacturers, especially growing and emerging industry clusters through several methods:

(a) Conversion: Modify existing industrial processes over time so that local manufacturers can replace their use of virgin resources with recycled materials;

(b) Expansion: Assist manufacturers that currently use recycled materials to expand their production and business volume to increase their capacity to use more recycled materials;

(c) Diversification: Assist manufacturers using virgin resources to expand to add new profit centers, ie. New product lines made with high recycled content;

(d) Manufacturing procurement: component parts and packaging

Seek opportunities for small businesses to supply large local manufacturers; ie. procurement of component parts and packaging made of recycled material.

**4. Start Up New Recycling-based Industries**

Assist start-up ventures that create local end-uses for recycled materials. Offer assistance to businesses starting to locate in the region to use recycled rather than raw materials in their manufacturing.

**5. Procurement Policies, Practices, and Consumer Information**

Develop government, business and industry commitment to "make the market" through recycled content product procurement. This includes consumer education to "buy recycled - buy locally made."

©Gainer and Associates, 1990

Grounded in these practical realities for small business development and economic development planning within the North Coast region, a comprehensive strategy rather than a piecemeal or all-eggs-in-one-basket approach to market development will strengthen the long-term economics of recycling in Crescent City and Del Norte County. The "Comprehensive Five-Point Strategy for Local Recycling Market Development" (Gainer & Associates, 1990) is a simple framework for organizing, planning, and efficiently executing a strategy for developing recycling markets. The

following is a more detailed explanation of the five main points of this comprehensive model and how it can work for recycling market development in Del Norte County.

## Working with Existing Recycling Markets

This first strategy involves two improvements on the conventional marketing approach.

- **Negotiate for better arrangements**

Del Norte Zero Waste businesses will benefit from the "strength in numbers" from joining regional, cooperative ventures. Joining forces with other materials recovery, salvage and recycling operations in the larger region will help to ensure that the Del Norte businesses are able to secure the best prices possible for their materials. The Authority can assist Del Norte County recycling collectors to creatively negotiate stronger, more flexible contracts with their brokers and buyers. Long-term contracts with floor prices, equipment leases or donations, and transportation allowances are all points which may be negotiated with their markets. For example, in 1999 Julindra Recycling installed a baler paid for through a loan from Fiber Reclaim, who now has a long-term contract for Julindra's newspaper and cardboard.

- **Use Backhauls to Reduce Transport Costs**

If something is being imported in, backhauls are what a truck driver can take out on their return trip home. Rural recycling centers have been using this option for a while to ship processed and baled recycled materials to market at the lowest costs possible. For many materials, Julindra uses backhauls to decrease their trucking costs out of the area. The question remains if this approach is being used for all materials to the maximum possible in Del Norte County. An innovative option for backhaul could be backhauling within the region, or setting up a regional backhaul brokerage. What types of products are delivered from warehouse to non-residential or residential sites. How could these backhauls, or back to the warehouse or store be used to collect recyclables? What could make this work? What materials could be collected? The businesses that deliver products would have to be identified and this possibility creatively addressed.

Some product backhaul examples are beer distributors, or more recently, Odwalla that backhaul their HDPE plastic containers. The Vons markets grocery stores have established an elaborate backhaul system for their produce waste from their grocery stores all over southern and central CA. Produce waste is kept in containers in the refrigerators at stores, then shipped back on empty refrigerated trucks to their central distribution warehouse. From the warehouse, all the produce waste is shipped to a central Materials Recovery Facility (MRF) where it is shredded and shipped to another location near farms for composting in the Kern County area above Los Angeles.

Other stores in Del Norte County may be willing to take responsibility for products or packaging which they sell, and takeback such products at their stores to return to their original suppliers for reuse, recycling and/or composting.

- **Plan for Market Slumps and Contingencies**

The Authority should advise and assist recovery businesses with contingency plans. For example, planning for how to handle the cash flow dilemma created when there is an extended period when the scrap prices for large-volume materials do not adequately cover transportation and processing costs. The Authority should plan with these businesses for their "worst case scenarios." Explore with these businesses their range of options in diversifying, changing specifications, downgrading/upgrading, stockpiling, or changing to markets to ship north or ship south.

- **The Rural Cooperative Recycling Infrastructure Development Project**

The "strength in numbers" benefit of cooperative marketing is generally recognized in this region. Sporadically, for periods of time, larger recycling collectors with processing facilities (such as Arcata Community Recycling Center in Arcata and City Garbage of Eureka) have purchased material from the small collectors and served as processing hubs. Historically, several factors, including (1) great distances between each other within the region, (2) a lack of experience in cooperative ownership, management and decision-making, (3) previous negative experiences, and (4) distrust among historically competitive small operators have kept most of the recycling collectors of the Southern Oregon coastal communities and the North Coast of California from realizing these benefits. The strongest deterrent is probably the uncertainty of the marketplace -- dramatic fluctuations in prices -- that keeps the region's recycling collectors from commitment to a cooperative effort, even on a trial basis.

Through a model contract with the California Integrated Waste Management Board, the Authority is attempting to create a model of cooperation. The Rural Cooperative Recycling Infrastructure Development Project is a cooperative project between the two regional solid waste authorities for Humboldt and Del Norte, in association with the non-profit Center for Environmental Economic Development (CEED) and the 19-other counties which form the Environmental Services Joint Powers Authority (ESJPA) of the Regional Council of Rural Counties. The primary goal of this project is to increase the recovery of materials discarded in a two-county region by implementing cooperative strategies to reduce collection, processing, and transport costs and to increase market value, and to apply the lessons learned to the other 20 rural counties of the ESJPA. This project focuses on efforts to cooperatively build the recycling infrastructure, including expanding and increasing the effectiveness of collection, processing, marketing and market development programs, as well as

sharing responsibility for information gathering, research and planning, and assessing opportunities to share equipment to jointly market, or to transport recovered materials.

## Attract Recycling-based Industries to Site a Plant Locally

The Authority can provide assistance to small start-up recovery businesses by drawing in the resources and expertise of business plan preparation, financial and loan packaging, technical assistance, and business training: all services that will help new ventures to survive the early critical years. Strategic alliances with large firms have been viewed by industrial developers as a key element in the successful start-up and

### *Table VIII-2*
### *Basic Issues Considered When A Recovery Business Decides Where to Locate*

**General Business Climate**

- Cost of Doing Business
- Availability of Infrastructure
- Availability of Affordable Financing - start-up, venture capital, ongoing access
- A Strong, Local Pro-business Attitude
- Quality of Life Issues - housing, education, recreation, clean environment, natural beauty

**Regulatory Issues**

- Multiple air quality permits and other permits may be needed depending on the number and types of feedstocks used and the nature of the manufacturing process.
- Uncertainty regarding the process and timing required to obtain permits.
- Legislative restrictions on uses of products made from postconsumer feedstocks.

**Access to supplies of recycled materials**

- Often, regular and consistent supply channels do not exist for recycled materials and will need to be created.
- Assurances regarding availability and quality of supplies from the point of collection.

**Access to dependable customer markets**

- Consumers know and understand the quality of products made with virgin materials, and the available supply of virgin materials is perceived as more predictable. Consumer acceptance of recycled materials is in a state of flux.
- There may be variations between access to supplies and consumer demand for recycled product.
- Lack of, or variations in, procurement regulations for governmental or other large consumers limits the ability to produce in quantity or to bid on contracts.
- Variations in consumer attitudes and level of consumer confidence may vary from time to time, from place to place, and from intermediary to end user.

**Access to capital**

- Financing will be needed for new or additional machinery necessary for using salvaged and/or recycled materials.
- A new industry has no financial track record. Lenders lack familiarity with the process and the potential of recycling-based businesses.
- The job retention/dollar of investment ratio is sometimes not recognized as favorably as job creation by government funding programs.

operation of small-scale recycling-based manufacturing ventures. Facilitating these strategic alliances for financing, technical assistance, buyers arrangements, etc. is an important role that the Authority can play.

While industry attraction has not been the most successful economic development strategy for Del Norte County, it is important for the Authority to remain alert to opportunities for recycling-based manufacturers to locate within the region. To be successful, an effort to attract recycling industries must combine the skills and resources of individuals and organizations within the region to carry out the specific elements of a recycling industrial development plan. This will require commitment to coordinate between Del Norte's recycling specialists and the region's economic development specialists. One key step to enhance the coordinated recruitment of recovery based businesses to the north coast is to expand the Humboldt Recycling Market Development Zone to include Del Norte.

## Start Up New Recycling-based Industries

A "marketing strategy" targeting inter-industry linkages and "growing and emerging" sectors of the regional economy needs to be developed for Del Norte County and the entire Southern Oregon - Northern California coastal region to unite in agreement of the kinds of recycling-based manufacturing most needed and the industries to be courted, the economic development agencies to be educated, the types of presentations to most effectively introduce prospects to the community, and the incentives. A coordinated marketing strategy will hopefully be one of the outcomes of the Rural Cooperative Recycling Infrastructure Development Project.

## Procurement to Reduce Waste

Local purchasing agents should be provided copies of the California Buy Recycled Training Manual and training that highlights how to Buy Recycled and where to get information on the thousands of products now available that have recycled content - to foster the use of local recycled content products and encourage practices which reduce the generation of wastes in the first place (e.g. reusable toner cartridges). Buy Recycled ordinances should set up a process to identify which cost competitive recycled products are available and then require all those covered by that purchasing system to use those recycled products. This would be particularly important for any reused, recycled or composted products produced locally, so that a stronger demand is created for those products. Any type of public construction or infrastructure project is an opportunity to "make the market." School remodeling projects, parking lots, new wings to public buildings, remodels of public buildings, additions, etc. should all be carefully examined for opportunities to buy reusable, locally-made and recycled products.

# IX. Reusable Goods

Reusable goods are discarded items that are useful to a buyer in their present condition, most often for their functional rather than material value. For example, used wrought-iron gates can be sold individually and as-is for hundreds of dollars, but their value is reduced to pennies on the dollar by treating them as scrap. Reuse operators are businesspeople who specialize in attracting, receiving, organizing, and selling discarded reusable goods. Reuse operators upgrade their materials by cleaning, sorting, organizing, and in some cases repairing them.

As a feedstock in the recovery process, reusable goods are characterized by diversity, unpredictability, and wide variations in quality. Well-run reuse businesses must find ways on a daily basis to tame this diversity, compensate for supply swings, and upgrade quality where possible. One way is to create retail departments, places where related and similar materials are taken and where they are further organized. Another is to provide ample tailored storage technologies that contain the organized inventory and present it in a favorable light.

Here is a list of saleable reusable items often found in recycling feedstocks:

- Metals: pipe, conduit, grills, gates, appliances, fasteners, patio furniture, tools.
- Polymers: computer casings, toys, furniture, planter pots, discard collection receptacles, tires, and pipe.
- Wood: doors: fencing, dimensional lumber, furniture, cabinets.
- Glass: dishes, windows, lenses, glass blocks, lamps.
- Ceramics: toilets, sinks, dishes, plant pots, brick, block, stone.

## A. Collection of Reusable Items

Although reusable goods are initially not a large category in tonnage terms, they are among the most valuable of all recoverable commodities in the discard stream. This high present value can be used to support a repurchase program that pays suppliers who are able to deliver goods to the operator's specifications. Paying money for goods stimulates more supply than is the case when donation or dropoff is the only alternative, because there are many haulers who will respond only to financial inducements. Experience suggests that as much as 20 per cent of an operator's expenses can be budgeted for purchases for resale.

Among nonprofit reuse operators, collection methods include buy-back, donation, drop-off, collection and salvage. Besides purchasing goods for resale, reuse operators also use donations and collection strategies analogous to recycling's dropoff and curbside modes. A donation certificate stating that goods of a certain value have been given to a charitable organization, is all the compensation many donors request. The donor can often shelter income from taxation in this manner. In dropoff, suppliers

simply relinquish ownership of their discarded reusables with no compensation being paid. In curbside collection, the reuse operator makes house calls and does pickups by appointment.

Salvage businesses take the range of reusable items from the tipping area at a landfill or transfer station, and such enterprises have succeeded under various ownership and management structures. In Monterey, CA, for example, the Last Chance Mercantile sales yard is owned and operated by a government agency. Across the world at the Mugga Lane and West Belconnen landfills in Canberra, Australia, the not-for-profit ReVolve salvages from "the tip" and sells to the public via open-air marketplaces. In Berkeley, California, the for-profit Urban Ore salvages reusables from the tipping area of the refuse transfer station under license with the city. There are many more examples of new reuse enterprises, including at least one, Play It Again Sports, which are publicly traded.

Like most American communities, Del Norte County currently has a considerable, but unknown, volume of unwanted reusable goods that are being stored by residents who believe they "are just too good to throw away." If a full-service reuse operation that provides the same sense of stewardship that residents have already demonstrated can somehow be organized as part of a recycling-based Resource Recovery Park, this untapped resource can be released to commerce. There it can be turned to account and made useful to the citizens. This will generate income for county residents, valuable resources for builders and property managers to use, and tax and other forms of revenue for governments to use.

Pound for pound, a reuse operation that uses all of the proven methods of collection - dropoff, buyback, collection, and active salvaging - will have a stronger positive impact on the local economy than any other form of materials recovery. By its nature, reuse recovery is job, skill, and knowledge-intensive. Nearly all the markets are local. Value is added with a net reduction of pollution. Both release "profits" in the form of improved property value, broadened wealth distribution, diversified trade, and increased employment.

## Recommendations

- Encourage reusables that are not able to be donated or sold at flea markets and classified ads to be dropped off at local thrift stores, drop-off centers, container sites, transfer station or the Resource Recovery Park.
- Establish rural reusables exchanges at container sites or transfer station in covered sheds where reusables are sold at garage sale prices (or given away).
- Negotiate with Del Norte Disposal to provide 40 cubic yard bins at the container sites or transfer station for reusables and white goods to be hauled to the Resource Recovery Park on a monthly or periodic basis.

# B. Wood Discards on the Northcoast

Deconstruction, salvage and increased recovery of wood in Del Norte has particularly favorable potential. The reason for this is that current recovery effort is minimal, the relative value of the wood in Del Norte buildings is quite high because of the County's history as a logging community, the most frequent management method for building demolition is training burns for the local fire protection districts, and the market demand for such salvaged wood is being proven in metropolitan areas.

A deconstruction contractor without a yard, who does practice advance or on-site sales will be required to sell or donate used building materials to a local or regional used building material resale store. If no resale store is available, then the newly deconstructed materials will either end up being recycled or landfilled.

Selling recovered dimensional lumber outside the Border Coast Region in some cases may be the best choice. For example, selling local redwood to a region that does not have a local source of deconstructed redwood may bring a premium price for the local deconstruction contractor. Until local demand for the materials is developed then selling outside the region may be the only option unless the deconstruction contractor has warehousing space to stockpile materials.

The Authority may want to assist new local deconstruction contractors by maintaining a list of used building materials markets (California, Pacific Northwest, Western, National and International). Several new listserves have been developed to match sources of used building materials, especially lumber, with architects, contractors and furniture manufacturers looking for used building materials.

# C. Used Building Materials Resale Store

The closest used building materials resale store at this time is located just north of Eureka. The Authority should concentrate on developing a local used building material resale store to ensure that these materials are available to local residents and businesses. The Authority has several options in terms of developing local used building material resale store. The options are:

- Before issuing demolition permits, County and City agencies may consider the potential for deconstructing parts or all of the building.
- Expand an Existing Lumber Yard to carry used building materials.
- Expand an Existing Reuse Business to carry used building materials.
- Expand an existing Demolition/Deconstruction Contractor to open a used building materials resale store.
- Facilitate a partnership between a used building material business outside the region to partner with a local business or non-profit to open a new used building material resale store.
- Identify and assist a local entrepreneur in opening a used building material store.

- Develop a used building materials resale store that allows for "consignment opportunities" so do-it-yourselfers can attempt to sell materials they salvage from their own remodeling and building projects.

Before pursuing any of the options listed above the Authority should contact the owners of a used building materials store that previously operated in Crescent City and went out of business, called "Bargain Bobs". Interviews of the former owners of this store would likely facilitate the development of a business plan for the new store.

The Center for Watershed and Community Health and St. Vincent de Paul of Eugene, Oregon participated in the Border Coast Regional Recycling Marketing Summit and may be interested in developing this used building material resale store. Both entities would like to identify a local non-profit that they would work with to develop a store. Both entities have experience in running profitable stores and are ready to begin work almost immediately.

## High-Grading Operation

A variation on plans to develop a used building materials resale store would include an enterprise which performs additional value-adding to the materials they recover. A new facility or additional space may be required to set up and operate equipment to be used to take used building materials and high grade them into a more expensive product. For example, studs may not sell for more than the labor to deconstruct and denail them. But if woodworking equipment is used to remanufacture the 2"x4" stud into tongue and groove flooring, the final sale price may more than cover the costs of deconstruction, transportation and manufacturing labor and bring in a profit.

# X. Recovery Strategies

Collection efficiency should not be confused with conservation. The collection and processing systems work together preparing materials for an end-user. Materials are not recycled until they are sold to an end-user, who manufactures new goods with them. In Del Norte for example, the scrap value for mixed color glass is generally less than collection, processing and transport costs. So a curbside collection system which fails to separate glass by color - even if it collected more glass than other collection systems - would not be a cost-effective recovery strategy.

For recovery to work, the end-use market must have demand for the material after processing, the proposed collection *and processing* system need to be able to recover materials of an adequate quality, and most importantly, the projected scrap value (even during market slumps) must exceed the full projected costs for collection, processing, and transport. If the resulting per-ton net cost to recycle is less than the full per ton disposal cost (including collection, transfer, transport, disposal, and future liability), then the recycling program for that material, at least from a municipal perspective, is likely cost-effective. Because of the high capital, operations, and maintenance costs of collection and processing systems, investments in education and technical assistance for non-collection, on-site management, and education for waste prevention (as discussed in section VII) are essential tools to assure that the collection and processing systems are not oversized.

## A. Collection / Processing / Facilities Overview from the Voids Analysis

Based on the Voids Analysis results from Section V.C., the priority recovery programs and their associated collection and processing systems are as follows:

**Table X - 1: Priority Recovery Programs in Del Norte 2000**

| Target Program | Collection | Processing | Facilities |
|---|---|---|---|
| 1. Land Application of Sewage Sludge | Additional transport req'd between sludge processing and land application site. | Lime stabilization or compost | Land application location(s) |

| Target Program | Collection | Processing | Facilities |
|---|---|---|---|
| 2. Establishing dropoff areas for Ferrous Metals, Mattresses, Box Springs, Furniture, and Non-ferrous metals | Drop-off for metals, mattresses and furniture | Separation of furniture and mattresses, separation and mobile baling of metals | Loading ramps and storage trailers for mattresses and furniture. Permitted drop-off location for metals. |
| 3. Select commercial salvage at TS/MRF | No significant change | Either floor sort (e.g. cardboard) or delivery to sorting conveyor. | Transfer Station / materials recovery facility |
| 4. Establishment and promotion of mechanisms to expand recovery of metal appliances and textiles from thrift stores | Identification and separation of reusable metal appliances at landfill, loading and transfer | Processing arranged by end-user | Loading ramps and storage trailers for recovery of reusable metal appliances and textiles. |
| 5. Composting yard debris, food, and paper | This will require a separate collection, and should not target recyclable papers. Storage will have health considerations. | Composting will require permits, monitoring of composting process and stormwater runoff, and screening of finished product. | For such a program, a permitted composting facility needs to be created. |
| 6. Salvage, reuse, and resale facility for construction materials | Drop-off program from deconstruction activities or targeted collections. | Separation and high grading is necessary for any sales. | Used building materials resale facility is required. |
| 7. Collection events or dropoff for electronic equipment | Collection events require temporary locations. | On-site separation, preparation for shipment, or local salvage. | No permanent facility required. |